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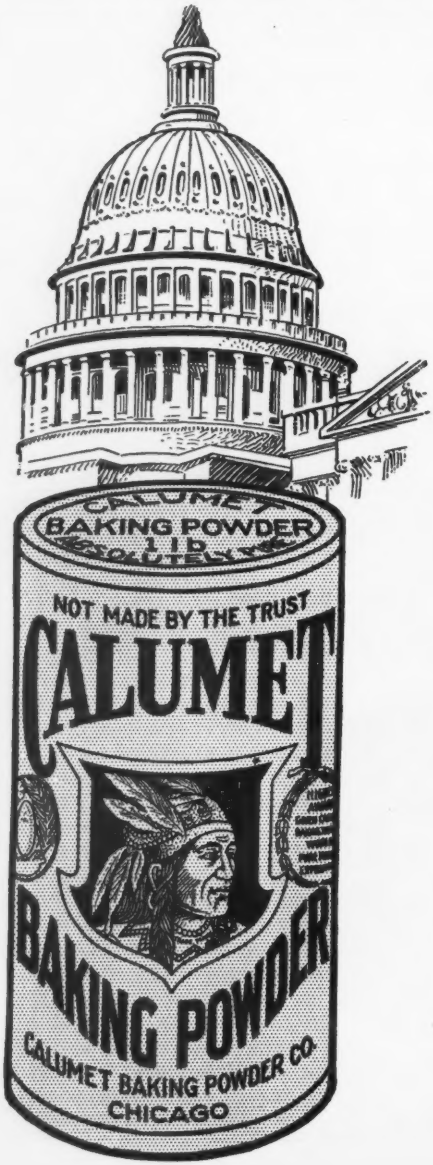

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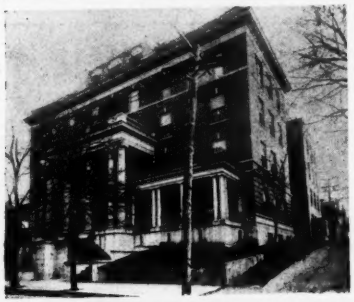

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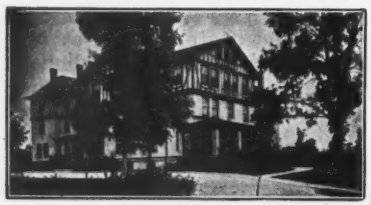

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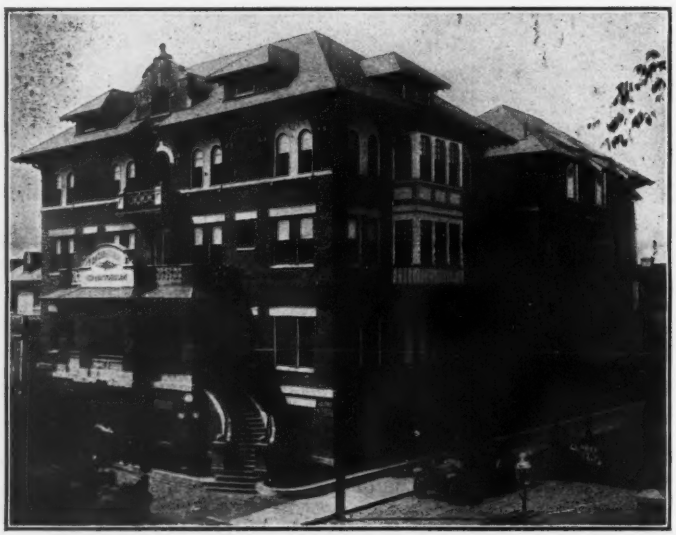

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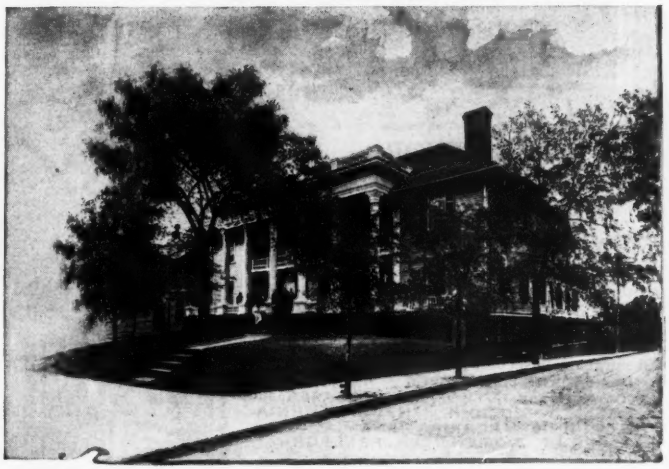

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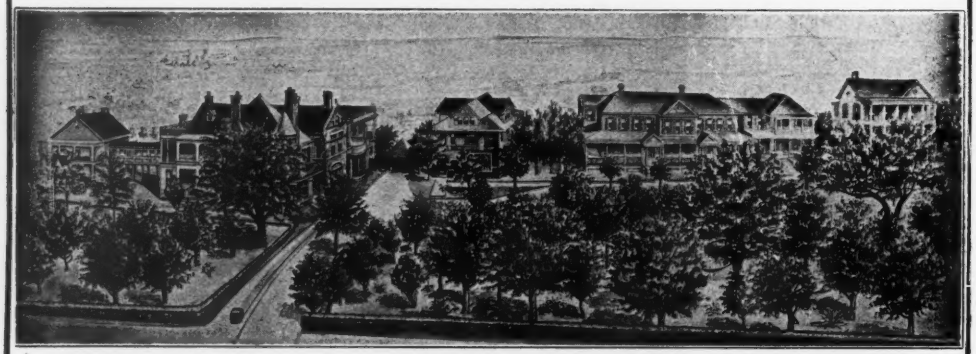

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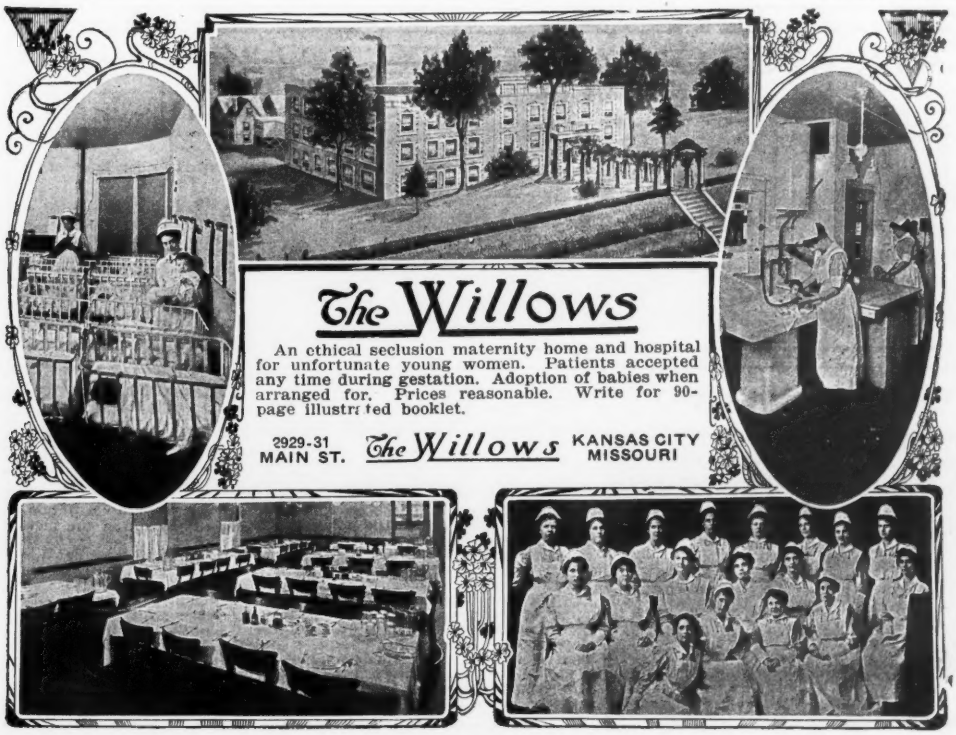
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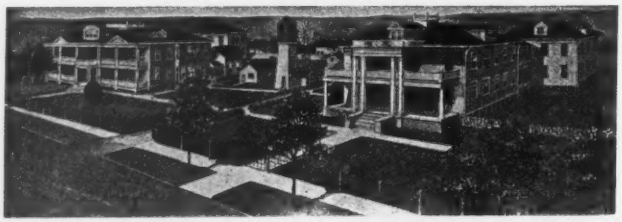

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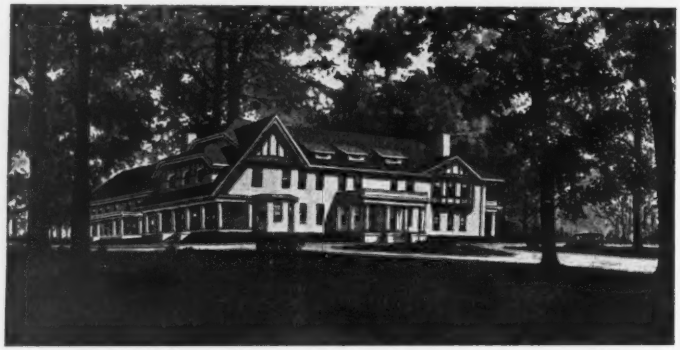

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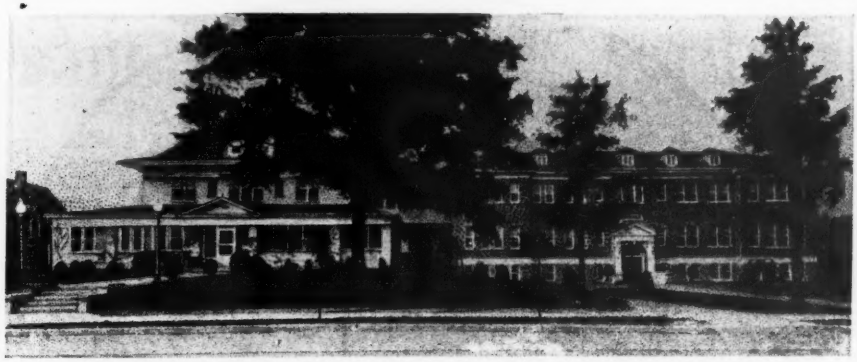

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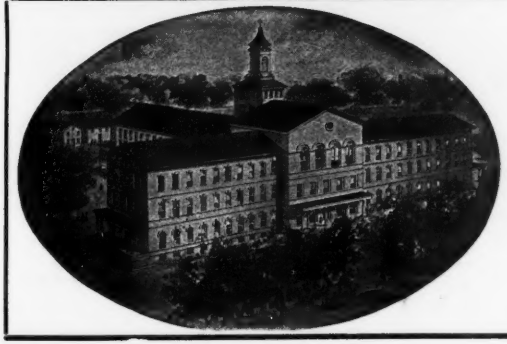

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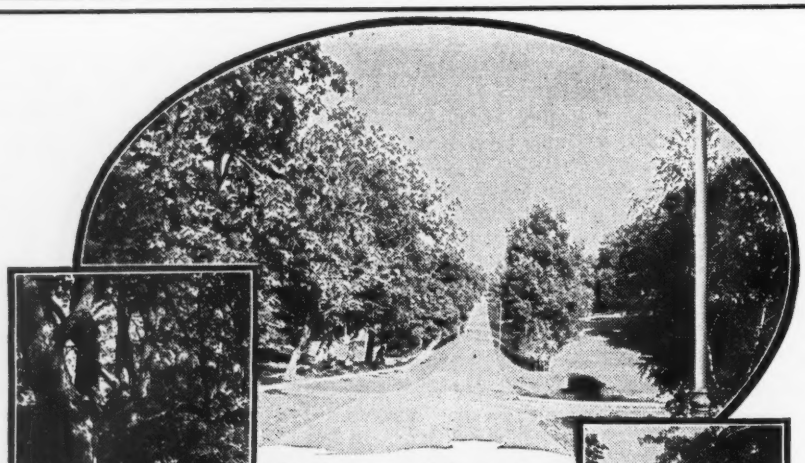

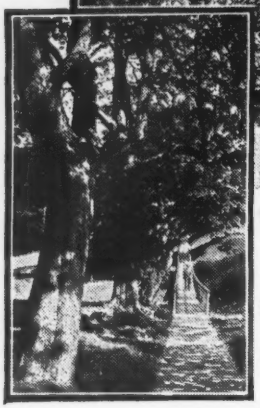

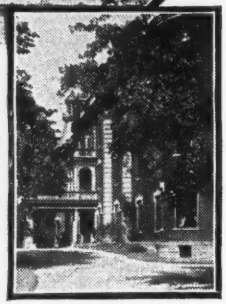

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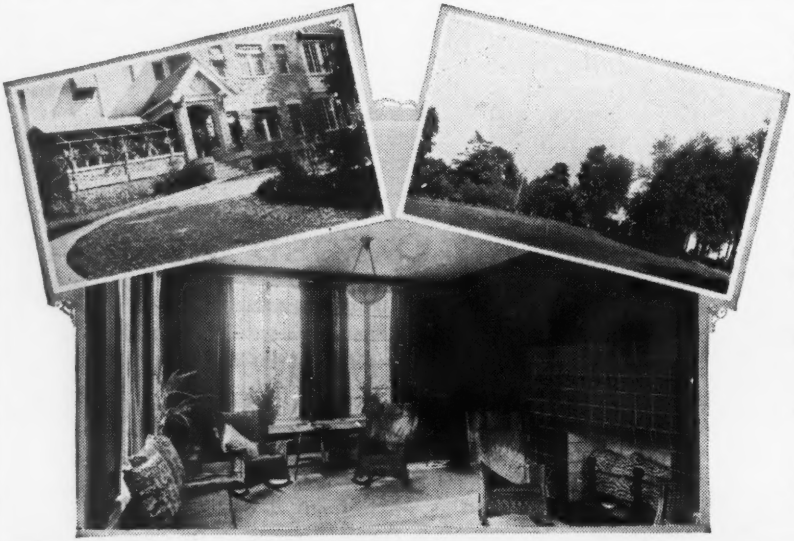

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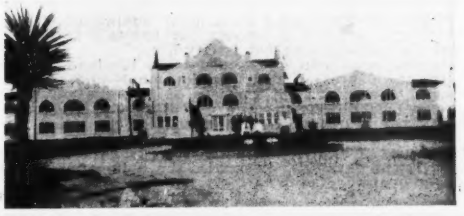

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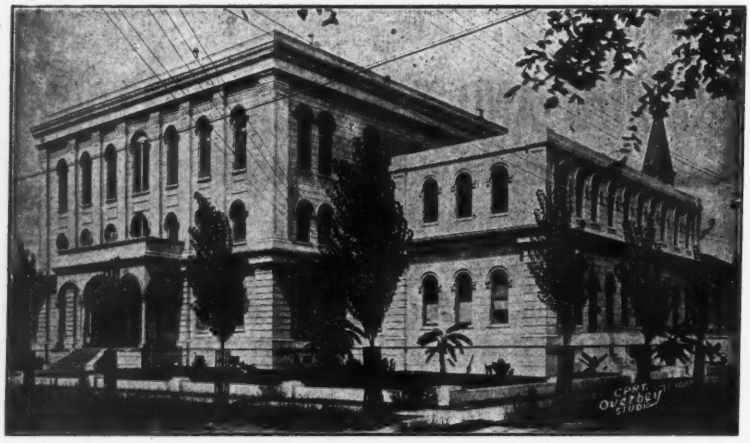

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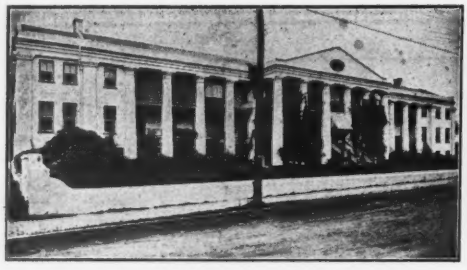

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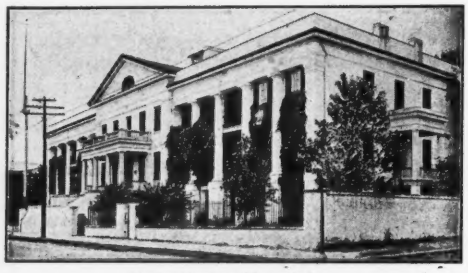

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See "The Journal" A. M. A., November 15th, 1919, page 1483, for "Preliminary Report of Experimental and Clinical Studies," by Hugh H. Young, M.D., Edwin C. White, Ph.D., and Ernest O. Swartz, M.D.

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JOURNAL OF THE SOUTHERN MEDICAL ASSOCIATION

PUBLISHED MONTHLY AT BIRMINGHAM, ALABAMA

Volume XIII JANUARY 1920 Number 1

MEDICINE

INTERNAL DISEASES, PEDIATRICS, NEUROLOGY, DIAGNOSTIC METHODS, ETC.

THE WORK OF THE MEDICAL DEPARTMENT DURING THE WAR*

BY MERRITTE W. IRELAND, M.D.,
Surgeon-General, U. S. Army,
Washington, D. C.

This is the second meeting of the Southern Medical Association which I have been privileged to attend. The first one was in 1915 at Dallas, Tex. When your distinguished President asked me to come here and occupy ten minutes of your time, I had little difficulty in making up my mind what to do.

It is a great pleasure to meet you again, and it seemed to me that you might be interested to review, in a very meager way, the work of the medical profession in the Army during the war. This is an appropriate time to speak on this subject, for the Medical Department can now see the end of its war work.

You may remember that when the armistice was signed we had 192,000 patients in our hospitals in France; 98,000 of these patients were battle casualties; and we had 70,000 patients in the hospitals in this country. Today the command in France is a negligible quantity; all the overseas sick and wounded have been brought to this country, and we only have 18,000 patients in our general hospitals. Three thousand eight hundred of these patients are in our tuberculosis hospitals and 1,200 are in U. S. Army General Hospital No. 43, which is given up to the treatment of nervous and mental cases, or in our psychiatric wards. In other words, we have not to exceed 13,000 overseas wounded in our hospitals today.

It seems to me that the medical profession of this country has handled the battle casualties most admirably. It is the consensus of opinion that we have taken better care of our soldiers than any other nation—this in spite of the fact that we carried on an active campaign three thousand miles from home, in a country whose man-power and material had been exhausted by three years of terrible war.

The Navy transported our sick and wounded home across the Atlantic in the best possible way, thanks to the far-sighted provisions of my friend, the distinguished Surgeon-General of the Navy.

When the sick and wounded were placed in the hospitals in this country they were kept there until they had received the maximum of improvement which the medical profession could give them. In cases where the soldier was not then fit to resume his occupation he was discharged and became a subject for the care of the War Risk Bureau.

It is interesting to note that the greatest part of our effort in this war was made in a year and a half. When war was declared the Medical Corps had only 450 members, the Dental Corps 86, the Veterinary Corps 59, and the Sanitary Corps was not then organized. The Medical Reserve Corps contained about 1,600 members. Many of these were doctors too old for military service or were essential teachers who could not go to war. But by almost superhuman effort, on the 15th of November, 1918, 30,500 medical officers, 4,600 dental surgeons and 2,000 veterinary sur-

*Address, Public Session, Southern Medical Association, Thirteenth Annual Meeting, Asheville, N. C., Nov. 10-13, 1919.

geons had been commissioned and were in active service. The Sanitary Corps had been organized and there were 3,000 officers on active service. And let it be said always to the glory of the medical profession that all of this was voluntary service. The number of professional men who remained at home until they were caught by the draft was so small that it is negligible and may justly be forgotten.

Demobilization of the Medical Department proceeded very rapidly as soon as the armistice was signed. Officers and men have been discharged, the welfare of the sick and wounded being considered, as fast as they could be brought back to the United States. On November 1 we had only 1,440 temporary medical officers, 172 temporary dental surgeons, 272 temporary veterinarians and 275 members of the Sanitary Corps. These officers are authorized for retention in the service until June 30, 1920.

Now what has been the result of all this effort? It has been this: the three million six hundred thousand men who were mobilized and brought into the service have been cared for as soldiers were never cared for before. They have been protected against disease in a wonderful way. More than two million of them were transported three thousand miles on a submarine-infested sea in comparative comfort, and when they suffered from illness in France they were treated by the very best of the profession of the United States.

The records show that to July 31, 1919, there had been 98,539 deaths from all causes; 48,072 of these deaths were due to external causes, as follows:

Suicides	271
Wounds received in action	44,123
Other external causes	3,680

These were deaths that the Medical Department could not prevent. There were only 50,466 deaths from disease. Of this number 39,898 died of pneumonia and 1,400 of influenza. In other words, 41,290 deaths occurred from respiratory diseases and only 9,176 from other diseases. We had some deaths from empyema, measles, meningitis, tuberculosis and scarlet fever, but out of this vast number of men we had only 222 deaths from typhoid fever, and only 45 deaths from dysentery. Intestinal troubles were absolutely negligible in the sick report of this vast army, and malaria cut but a small figure.

In other words, we have made tremendous advances in preventive medicine in the twenty years since the Spanish-American War, when our great sick report was due to typhoid fever, malaria and dysentery. This accomplishment stands to the everlasting credit of the profession. But in the prevention of the respiratory diseases we have made but little if any progress. We are as helpless today as we were in the Civil War in handling influenza and pneumonia. If we could have escaped the dreadful scourge of influenza, with its accompanying pneumonia, which occurred in September, October and November, 1918, the sick record of the Army would have been much better than the record of an equal number of people in civil life. The results of preventive medicine in this war are something to be proud of except the results with the respiratory diseases. The dreadful inroads which these diseases made on the Army should be a stimulation to greater efforts to control them. A tremendous amount of work has been done on pneumonia and influenza, and let us hope that the prevention of pneumonia at least will be accomplished in the near future. The absolute control of typhoid fever in 1898 looked as far away as the control of pneumonia looks today. Yet within a comparatively brief period the medical profession had within its grasp the control of this disease which had been the scourge of armies for many years.

The Medical Department has been reduced in number so that it is, numerically speaking, a negligible quantity with the profession of the country.

It might be well, however, to mention some of the plans that we have for the Department and the Reserve Corps. I sincerely trust that a great medical center can be built up at the Walter Reed Hospital, just outside of Washington. We already have the appropriation for the necessary land and it is believed that the Army Medical School, the Surgeon-General's Library and the Museum should go out there. An effort will be made to obtain an appropriation for the Army Medical School during the coming session of Congress. A large modern hospital should

be constructed there, where all the different specialties are well represented. It is believed that this can be accomplished. It is thought that within a comparatively few years the Walter Reed Hospital can be made a medical center which the profession of the country can speak of with pride. The members of the Corps who have recently joined can be taken there and given special instruction in Army work; medical officers who have been in the Corps for several years can be brought back there and given advance work in the different specialties; a great many of the reserve officers can be brought there to receive special instruction; and we hope to give the opportunity to some of our distinguished men to deliver lecture courses at this school.

I am quite sure that from now on the great part of the Army will be in divisional cantonments. This will make it certain that in the future a great number of medical officers will be stationed together, and that they will have a large hospital at their disposal for the care of the sick of the division. In this hospital advanced professional and research work can be done. These large cantonment hospitals will enable us to take into the Corps young doctors who have just completed their professional work at college and to assure them at least a year's hospital training in the Army. The medical officers who have been in the Army for some time will also be ordered to some of our principal hospital centers for post-graduate courses. The placing of troops in cantonments is of great importance to the Reserve Corps, for it will make possible their instruction every summer with a large body of troops.

An effort is being made now to secure for the Medical Department a Service Corps which will consist of officers who have served as enlisted men in the Medical Department. When commissioned these officers will be given the duties of adjutant, registrar, pharmacist, mess officer, property officer, and other such non-professional positions, thereby allowing the highly trained medical officer to devote himself to his professional duties.

By these improvements it is believed the life of a medical officer in the Army can be made attractive, and it is hoped to recruit the Corps to its normal strength. We now have seven hundred vacancies.

The medical man in the Army is not in any way different from the physician in civil life except that he has given up his active career for a special line of work. We need your sympathetic help and support. I sincerely trust that you will not forget us now that you have been discharged from the Service and have returned to your activities in civil life.

THE NATIONAL RESEARCH COUNCIL*

By Henry A. Christian, M.D.,
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War conditions demonstrated that groups of scientific men, by coming together to discuss problems for investigation and by co-operation could facilitate and expedite research. This was the actual experience not alone in America, but in all combating countries. During the war chemists touched elbows with pharmacologists, pharmacologists with physicists, physicists with engineers and engineers with astronomers, etc., as the problems of war overlapped and interwove during the efforts to solve them. Co-operation and correlation of efforts were found to be effective in research. To many men it seemed that, in this way, war work had demonstrated something worth maintaining in peace times. This feeling is responsible for the organization of the National Research Council on its present basis.

The National Research Council is not a governmental agency and receives no support from the Government. It does, however, co-operate in every way possible with the scientific bureaus of the Government.

The National Research Council is organized under the National Academy of Sciences, a governmentally chartered institution. It is privately supported. At

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present it has a temporary home in Washington. Later it will have a permanent abode along with the National Academy of Sciences. It is organized into divisions, six general and seven technical, as follows:

DIVISIONS OF GENERAL RELATIONS

1. Government Division.
2. Division of Foreign Relations.
3. Division of States Relations.
4. Division of Educational Relations.
5. Division of Research Extension.
6. Research Information Service.

DIVISIONS OF SCIENCE AND TECHNOLOGY

7. Division of Physical Sciences.
8. Division of Engineering.
9. Division of Chemistry and Chemical Technology.
10. Division of Geology and Geography.
11. Division of Medical Sciences.
12. Division of Biology and Agriculture.
13. Division of Anthropology and Psychology.

Each division has a salaried chairman resident for his term of service, usually a year, in Washington.

A technical division is made up of representatives of national scientific societies and members at large, the former in the majority. Divisions meet periodically.

The Division of Medical Sciences includes anatomists, physiologists, pathologists, bacteriologists, pharmacologists, roentgenologists, surgeons, dentists, physicians and neurologists. In groups and committees these discuss problems and undertake investigations. Problems overlap boundaries of divisions and joint relationships result. Chemists and bacteriologists or psychologists, physiologists and internists co-operate. Many such groups are at work or soon will be.

The food products people have problems. From their profits they are willing to apply a fraction for investigation of their problems. The National Research Council, through a group, supervises and steers their work. The Engineering Foundation seeks advice as to the problem, mental and physical, of the working man in his occupation. Some of their problems are capable of solution and investigation is undertaken.

Methods of classifying anerobic bacteria are unsatisfactory. A group of bacteriologists undertake to study these organisms gathered from many sources. They need rare sugars in guaranteed purity. The Chemical Division co-operates to supply them. These are but a few examples of possible activities.

The National Research Council has hardly finished its preliminary stage of organization, and yet worth-while things are underway. It seeks co-operation and offers to help in scientific endeavor. It wants support in all sections of the country. It needs the interest and co-operation of the South. It wants your help and your interest.

THE STATUS OF AMEBIC DYSENTERY WITH SPECIAL REFERENCE TO DIAGNOSIS AND TREATMENT*

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The subject of amebic dysentery has always been an important one to Southern physicians and, at present, owing to the influx of overseas troops, bids fair to play a prominent part in the medical history of the country at large. As the recent literature on amebiasis is voluminous and the time for this address limited, the writer has simply attempted briefly to summarize the advances made in the diagnosis and treatment of amebic dysentery and to present them in as broad and unbiased a way as possible. Owing to the necessity of greatly condensing the subject matter, many interesting and important phases of the disease have had to be omitted.

The Recognition of Endamebiasis.—The recent literature reveals nothing new in regard to symptoms and signs of amebic dysentery, but the recognition of carriers looms up into great prominence. Many of these carriers give no history of ever having had an attack of dysentery, yet they are a public menace and their detection constitutes one of the serious problems of the day. The diagnosis of amebic dysentery and of the carrier state is fundamentally dependent upon the finding and identification of the organism in the stool. For the detection of the active or

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vegetative endamebae, a stool obtained after the administration of a saline cathartic is best suited; cysts, on the other hand, are more readily found in the more solid stool.

Parasitic Endamebae of Man.—Let us briefly consider how many human parasitic endamebae we have to deal with. Up to very recently there were practically but two parasitic endamebae to differentiate, namely, endameba histolytica and endameba coli, the former pathogenic and the latter considered non-pathogenic. The question has now been further complicated by the discovery of endamebae nana by Wenyon and O'Connor — another supposedly harmless organism. Its cysts are frequently tetragenous, similating in this respect those of E. Histolytica, hence the identification of this species depends upon the finer points in the structure of the nuclei, such as the presence or absence of a central granule, distribution of chromatin, etc. Less importance is now placed upon size, shape, thickness of cyst wall, than formerly. If E. Nana has come to stay it will undoubtedly add fresh difficulties to the identification of endamebic cysts in spite of the newer refinements in differential diagnosis. I have purposely omitted to add another non-pathogenic ameba very recently discovered by Shimura because its description is not unlike that of E. Nana and it is to be hoped that it will prove to be the same. The differentiation of vegetative endamebae depends chiefly upon the ability of E. Histolytica to ingest red blood cells according to Wenyon and O'Connor. The detection and recognition of cysts have been somewhat facilitated by the use of iodin stains, particularly Donaldson's iodin-eosin method. Kofoid and his collaborators have recently published a table demonstrating the diagnostic features of the three organisms stained by the iodin-eosin method. These observers agree with Wenyon and O'Connor that E. Nana is a common ameba in human feces. They found it in 325 cases in 1,200 overseas troops and in 92 cases in 300 home service troops—a total of 417 in 1,500 men, or 28 %. It seems astonishing that an organism so common could have been so generally overlooked, but this only illustrates the many difficulties met with in differentiating species. Not very long ago endameba tetragena and endameba minuta were both considered new species of pathogenic endamebae; now they are looked upon as different phases of E. Histolytica. It is not to be wondered at, then, that we come upon such radical views as those expressed by Knowles and Cole, Vinson and others, to the effect that the usual critera of differentiation of species can not be relied upon, and further, that the different species are all one and the same organism. Vinson urges that we must bear in mind "that very numerous modifications in size, shape and pathogenicity of the ameba may arise, depending entirely on the surroundings in which it finds itself. Tropical amebic dysentery is only tropical because temperature, unsuitable diet and other factors favor the development of the ameba, and it is really in people from the tropics that amebae as a cause of dysentery has been sought in the past."

Such confusion in the literature is rather depressing to the practitioner. For the present, however, it may be safer to adhere to our two well-recognized species, E. Histolytica and E. Coli, but with an open mind for E. Nana. It is encouraging to note that there is promise that these vexing problems of identification of species may be solved in the near future by culture on artificial media of parasitic endamebae. In the past only the Limax group has been grown in vitro. Recently Cutler, employing special egg or blood-clot media, claims to have found a method by which E. Histolytica can be maintained in culture for several months and these cultures, if inoculated into cats, produce dysenteric lesions of the intestines. His experiments sound convincing and if his results are corroborated by others, it should greatly advance our knowledge concerning parasitic endamebae.

Animal Inoculation.—Where the identification of a species is in doubt, we have at our command a method of testing its pathogenicity. For this purpose kittens are employed, as they have been found the most susceptible animal. A high per cent. of kittens can be successfully inoculated when the material is injected into the rectum. E. Histologica usually causes an acute and rapidly fatal dysentery in the kitten; on the other hand, E. Coli, E. Nana and E. Tetragena of Shimura produce no ill effects in cats. Clinically speaking, this

method has been made very little use of except in experimental work. It is deserving of greater practical application.

Proctoscopy in Diagnosis of Amebic Dysentery.—The proctoscope or sigmoidoscope offers a valuable means of diagnosing amebic dysentery as ulcers thus noted may appear so typical as to be pathognomonic. Furthermore, in this manner material for examination may be obtained directly from the base of an ulcer by the use of a long applicator. Such a specimen will frequently demonstrate active endamebae where the stool fails to show them. Not only does the proctoscope aid in diagnosis, but also in determining the severity of the disease and in gauging the progress of treatment. Lastly no case should be discharged as cured without a proctoscopic examination. If this rule were universally adopted there would be fewer relapses and one might add fewer drugs described as "specifics." The writer has had the experience of examining several cases proctoscopically which were reported to be cured and found ulcers still present in spite of the fact that the stools were reported negative for active or encysted amebae. There is nothing strange about this, for even when the stools have been repeatedly and carefully searched for cysts they have been known to be absent for twenty to twenty-five days following a course of treatment.

Roentgenologic Findings in Amebic Dysentery.—In the recent literature we find the x-ray discussed as a diagnostic aid in amebic dysentery. For this purpose bismuth or barium enemata are mainly employed. Florand and Benzonde observed the slight degree of opacity presented by the affected segments, which sometimes appear quite empty, as well as the shrunken and atrophied condition of the rectal ampulla and of the sigmoid flexure of the colon. McMahon and Carmon found that in non-amebic, chronic ulcerative colitis the x-ray shows the colon to be small, smooth and without haustration in the parts affected, but in a limited number of examinations they have not found cases of chronic endamebic colitis which furnish any characteristic or similar roentgen findings. In their chronic cases they found a normal roentgenologic picture. They add, however, that Sanford has emphasized the fact that the entire syndrone of chronic endamebic colitis as seen in the North is not so severe as in the South and the tropics, which may explain the absence of marked pathologic changes in the bowel wall.

The apparent discrepancies presented in these papers may be fully explained by the above statement. From the writer's proctoscopic experience of the more severe cases of dysentery seen in a semi-tropical climate, he is strongly inclined to agree with the French investigators, nevertheless the more indolent cases observed in a Northern climate might well furnish no appreciable radiologic changes. Thus the roentgen findings in the North may be of greater differential diagnostic value than in the South. The subject requires further study, especially in the South, before its diagnostic value can be estimated.

Therapeutic Test.—The writer hesitates to record this as a method of diagnosis, as such tests are unscientific and are in effect an expression of ignorance. Nevertheless, there will occasionally be a case where after conscientious study of all the data obtainable, the diagnosis still remains uncertain. It may be that no active endamebae or cysts are found after repeated examinations and the proctoscope fails to yield any positive results, yet the patient has a mild dysentery. On the other hand, endamebae may be found, in such a case, which appear to be E. Coli. In such instances it is only fair to the patient that he be given the benefit of any doubt and treated accordingly. As an illustration of this I might recall a case mentioned by Sellards in which E. Coli cysts had been repeatedly identified in the stool. The patient was not at that time ill and received no treatment. A few months later this patient developed a typical and fatal dysentery. Sellards wisely cautions that the establishment of the presence of E. Coli does not exclude the possibility of the existence of a mixed infection. It is to be hoped, however, that with our rapidly increasing knowledge of this disease there will soon be less and less occasion to employ this method.

Treatment of Amebic Dysentery.—On reviewing the recent literature of amebic dysentery one is still forcibly impressed by the large number of drugs recommended for its treatment. A partial list would comprise ipecac, alcresta ipecac, emetin and its derivaties, cephaelin and synthetic

derivatives of cephaelin, salvarsan, neosalvarsan, bismuth, chaparro, simaruba, oil of chenopodium, pomegranate, epinephrin, protargol, tannalbin, benzyl benzoate, and others. On closer scrutiny it will be noted in many instances that the patients have been kept under observation for an insufficient length of time and with no record of any prostoscopic examinations.

Amebicidal Properties of Drugs in Common Use.—Claims are made for the amebicidal properties of many drugs administered, based, in most cases, upon their ability to destroy free living amebae in artificial cultures (in vitro). The mere fact that a medicinal agent is highly amebicidal to the Limax group in vitro does not necessarily mean that it will have the same effect on E. Hystolytica when it is administered orally or given hypodermically. Many substances will destroy amebae if they are able to come in direct contact with them in sufficient concentration and for a sufficient length of time. This is unfortunately too often impracticable in the human intestine where the ambeae are imbedded in the tissues as well as protected by mucus. Thus it is that medicated enemata are gradually falling into disuse. Ordinary saline or soda solutions will mechanically wash out many amebae and produce no irritation. The seldommentioned experiments of Dale and Dobell are highly interesting in considering the amebicidal value of certain drugs in common use. Their method differed from that of other investigators in that they used an emulsion of endamebae histolytica in saline solution obtained by thoroughly scraping the colonic mucous membrane of a freshly killed kitten which had been infected with E. Histolytica. The emulsion was then kept in a thermostat at 37° C. for about fifteen minutes. If the amebae were then healthy and active a series of samples was measured into other tubes and measured volumes of solutions in physiological saline of the drug to be tested were added, with rapid mixing, so as to make the series of dilutions in which the action was to be tested. Time will not permit further technical details—it suffices to state that by this method they were able to demonstrate that neither emetin nor cephaelin in 1 to 10,000 dilution killed the endamebae histolytica after an interval of one hour and even longer and in certain instances emetin was not lethal in much greater concentration. These results are in marked contrast to the experiments of Vedder, who found that culturable amebae were killed by emetin hydrochlorid and cephaeline in a dilution of 1-100,000. Quinine in 1-10,000 killed a large proportion in one hour. In 1-1,000 dilution, all were killed immediately. Neosalvarsan had no effect in 1-1,000 solution. Tartar emetic 1-1,000 solution is lethal in thirty minutes. Detannated Chaparro amargosa mixed with an equal part of amebic emulsion failed to kill them after an interval of an hour. It is interesting to note here that Nixon has reported that Chaparro has a lethal effect in a concentration of one part in one million. Dale and Dobell suggest on the basis of their experiments "that the theory of the mode of action of emetin in amebic dysentery needs reconsideration. They conclude from their observations that (1) emetin does not cure amebic dysentery by virtue of an intense direct amebicidal action, but that the host must in some way co-operate in the effect; and (2) that there are indications pointing to a connection between that property of emetin and cephaelin which gives them an emetic action and their therapeutic efficiency in amebic dysentery. Experimental dysentery in kittens was refractory to all kinds of treatment." These observations have been presented at some length because it is an admirable contribution and up to the present time the writer has failed to observe in the literature any contradiction or corroboration of these results.

Ipecac and Its Alkaloids.—The most commonly used drugs today are unquestionably ipecac and its alkaloids, particularly emetin. In 1911 Vedder showed that emetin and cephalin had powerful amebicidal properties in vitro. A little later Rogers administered emetin hydrochlorid subcutaneously and intravenously in amebic cases with much success. It is not generally known, however, that Warden in 1891 stated there was no doubt that the active remedial agent in ipecac was the emetin. Warden advocated the administration of crude emetin (a mixture of emetin and cephalin) as the insoluble double iodid with mercury, in which form it could be swallowed by the patient

without being vomited. Walsh and Dymock used this compound with success in the same year. From that time up to the practical application of emetin by Rogers in 1912 it seems to have been lost sight of.

The claims of Rogers in regard to dosage and curability of amebic dysentery by injections of emetin hydrochlorid have not been fully substantiated.

Combined Emetin Treatment.—It is generally conceded that emetin hydrochlorid by needle or by vein will control and check an amebic dysentery more rapidly and easily than any other agent in most cases, but unfortunately a majority of the patients relapse after a single course of treatment, and many after several courses. Furthermore, emetin alone by needle has not proved satisfactory in the treatment of carriers. It required considerable time for these facts to become generally appreciated. Then we note in the literature the development of a combination form of treatment which consists essentially of emetin by needle and ipecac or its alkaloids orally, or, as the case may be, some other drug by mouth. As far back as 1914, Carter advocated the administration of salol-coated ipecac pills by mouth and emetin by needle. He is convinced that acute amebic dysentery requires the entire root with all its alkaloids as well as emetin. Simon is of the same opinion except that he does not fully concede the value of emetin. Recently we find the combined hypodermic and oral administration of emetin hydrochlorid advocated by Wenyon and O'Connor, MacAdam, Savage and Young, and others. This method of treatment was recorded by the writer in 1915. Two cases were thus treated, but the dosage of emetin hydrochlorid by mouth was too large—in one instance 2/3 of a grain daily, and in the other 1 grain. In the first instance, the drug was put up in salol-coated pills. Both cases made good recoveries, but the intestinal irritation was such as to discourage its further use at that time. We now know that the dose of emetin hydrochlorid by mouth should not exceed one-half of a grain daily. The procedure generally adopted is to administer 1 grain of emetin hydrochlorid by needle and half a grain orally for ten to fourteen days, always carefully watching for any signs of toxicity. In the same manner emetin-bismuth-iodid may be substituted for emetin hydrochlorid. It is administered in 3-grain salol-coated pills once daily for a period of twelve days. Lillie and Shepheard consider the salol-coated pills a distinct improvement upon the keratin-coated tabloids from a curative point of view, and they add also that they cause less vomiting and loss of weight. When ipecac by mouth is used in conjunction with emetin hydrochlorid by needle it is essential that it be administered in sufficient dose and retained. The dosage, however, is somewhat less than where it is employed alone. In the combined method of treatment 50 grains or ten salol-coated pills daily for ten days is generally efficient. The writer has maintained for years that there is no rationality in giving salol-coated ipecac pills in decreasing dosage. It might be well to add here that, clinically, alcresta ipecac is not as effective as the powdered drug. According to the investigations of T. Sollman, this may be explained by the fact that "the alkaloids of alcresta ipecac are entirely insoluble both in acid and alkaline solutions of physiologic concentration. The solubility is not improved by the addition of bile salts or of albumen." Many attempts have been made to improve the mode of administration of ipecac, but without much success. The first advance was the use of salol-coated pills. Some years later Beck advised the duodenal medication of ipecac by means of an Einhorn duodenal tube. Recently the Jutte tube is recommended for this purpose. The writer has had one brief experience with the Jutte tube. The patient took the ipecac through the tube with apparently little discomfort or nausea on two successive days, but deserted from the hospital on the third day.

Whenever a salol coating is used it is important that every stool be examined for pills, as they are not infrequently passed through the intestinal canal unaffected. This applies to any salol-coated pill whether the ingredient be emetin hydrochlorid, powdered ipecac or emetin bismuth iodid; otherwise it is impossible accurately to determine the dosage administered.

These combined methods of treatment are given in courses of ten to fourteen days and are applicable to both acute cases and carriers. Frequent examinations of

stools and proctoscopy will gauge the progress of treatment. It is seldom wise to push treatment beyond a course of fourteen days even if endamebae are still present. The patient should then be rested—soothing enemata may be injected and bismuth by mouth to allay the gastro-intestinal irritation frequently caused by the medication. Further courses may be inaugurated after intervals of two to three weeks. In analyzing the efficiency of the three combined methods we find Wenyon and O'Connor strongly in favor of emetin hydrochlorid by mouth and by needle; and they further show that it is far more effective when given simultaneously by both routes than single by mouth or by needle. Savage and Young also obtain best results with the combined emetin method. The next most efficient combination in their hands was emetin by needle and ipecac by mouth — although they achieved practically as good results with emetin-bismuth-iodid. MacAdam also advocates the combined hypodermic and oral administration of emetin hydrochlorid.

The writer has had good results with the combined emetin and ipecac method.

Toxic Effect of Emetin.—The toxicity of emetin hydrochlorid in particular has been thoroughly stressed in the literature. The earliest sign is slight weakness in the legs—knees give way, pains in calves of legs. Unless the drug is withheld, general muscular weakness supervenes with signs of a multiple neuritis — blood pressure falls and cardiac weakness is manifest. Where treatment is carefully supervised, toxic manifestations will rarely be encountered. It is important to bear in mind that the dose of emetin hydrochlorid by vein should not exceed one and one-half grains daily. Larger doses are dangerous. Patients should be cautioned to report immediately the development of any pains or weakness in the lower extremities.

Other Forms of Treatment Advocated in Amebic Dysentery.—Chaparro amargosa has been advocated for several years by Nixon and others and recently by Sellards and McIver. It has the advantage of being easy to administer and practically non-toxic. Sellards and McIver consider from their pharmocologic investigations that evidence points to the presence of a glucoside as the active principle. It is noteworthy that Simaruba, which was once held in high esteem for dysentery, is closely related botanically to Chaparro. There is not sufficient data in the literature to judge of its value as compared to the combination form of treatment just mentioned. I have had a very recent experience with the drug in a patient from Texas with amebic dysentery who had taken Chaparro for almost six months with few interruptions. He stated that while taking the drug he always felt better and his bowels checked up temporarily. Nevertheless, on examination his stool revealed active endamebae. After an intensive combined emetin-ipecac treatment he left very much improved. I do not say cured, as sufficient time had not elapsed.

Among other forms of treatment we find arsphenamine and neoarsphenamine recommended either alone, or, as Gunn advocates, in connection with emetin by needle. Oil of chenopodium is recently championed by Barnes and Cort, who claim it possesses marked power as an ambebicide. Deeks advocates the combined use of emetin by hypodermic and large doses of bismuth by mouth. This is at variance with his earlier claims in which he stated that the disease could be cured by large doses of bismuth alone.

Probably the very latest treatment with the newest remedy on the market is the use of benzyl benzoate in dysentery. Macht and Fisher believe it has amebicidal qualities based on a series of experiments in vitro. Its clinical use is reported by Houghwout and Lantin. They treated eight cases (including Osuzano's two cases) which were all benefited. The dose was ten to thirty drops three times daily. The cases have not been followed long enough to make any definite statement as to cure. Many other drugs and methods of treatment might be mentioned, but they appear to be of minor importance and their value problematic.

Summary of Various Treatments.—In summing up briefly the various methods of treatment advocated at the present time one can safely state that ipecac and its alkaloids are still the sheet-anchor in the treatment of amebic disease. The tendency of the times is to administer a combination form of treatment — that is to say, emetin hydrochlorid is given hypodermatically in conjunction with the oral administration of either emetin hydro-

chlorid, powdered ipecac or emetin-bismuth-iodid. Occasionally some other drug may be administered by mouth as Chaparro or bismuth. There is reason to believe that this form of treatment is a distinct advance in the therapy of amebic dysentery and that by its use relapses will be markedly diminished. It has met with notable success in the treatment of carriers.

OTITIS MEDIA*

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Of the several conditions described by authorities as often causing so-called obscure elevation of temperature during childhood, otitis media is one of the most frequent and important. To say that no physician who can not intelligently use the otoscope is capable of practicing on children is aphoristic, and yet a very large percentage of consultations reveal an undiscovered otitis, showing that the child has not been adequately and thoroughly examined. Perhaps the nearest rival to otitis in unrecognized conditions in early life is pyelitis.

Otitis media may occur with fever and without pain, or with pain and without fever. The former is more frequent in infancy and early childhood, while the latter is more apt to occur in later childhood 'though temperature is also frequent here. Notable exceptions to this general rule are common. It can not be emphasized too strongly that it is an error to suppose that because a child hasn't an ear ache there is no middle ear inflammation.

It is not my intention to dwell on the importance of recognition so much as to discuss the exciting causes, and briefly to outline the varieties of inflammation of the middle ear and tympanum. What I shall say is based upon an experience of over twenty years, augmented by the number and variety of cases seen during the recent epidemic of influenza. It has been my custom in the past to call upon an otologist when incision of the drum was needed, although I have frequently performed this operation myself. During the past winter, however, it was difficult, and often impossible, to secure the services of an otoligist, and I was, therefore, forced to attend to most of such cases myself. This experience gave me the opportunity of observing a very large number of inflamed ear drums and of studying the varieties of inflammation minutely.

The recognition of middle ear inflammation as a complication or sequel of measles and scarlatina is now classical. Other causes have been slower of recognition. Whooping cough furnishes its quota, though I have seen comparatively few cases from this cause. The common head cold or naso-pharyngitis in ordinary times furnishes the largest number of cases, while an epidemic of influenza, such as that through which we have recently passed, almost overwhelms us by the numbers of this complication. Statements with regard to its incidence with influenza differ widely in different localities and with different men in the same locality; but my own experience has been that it is an exceedingly frequent complication. This may be due to the fact that in consultation practice one is apt to see more severe cases of any disease and therefore draw erroneous conclusions. It was noted that otitis came on at any time during the course of influenza, although more frequently as a late complication. One striking feature was that a child which had pneumonia following an influenza would resolve and be apparently on the road to rapid recovery, when the temperature would suddenly rise, and on examination an otitis would be discovered. This was so frequent that the diagnosis would often be made from the history alone. In Norfolk the first outbreak of influenza affected comparatively few children, while during the second, which occurred after quite a lull in morbidity, a comparatively larger number of children were affected. In both outbreaks the incidence of otitis was large.

The phase of otitis media which I wish to emphasize on this occasion is the variety and manifestation of inflammation of the middle ear, the tympanum and the mastoid cells, which routine examination of the ears of all children coming to our attention presents. Several which I have classified as definite types might be considered by some as variant forms of some

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other type, but for convenience I have considered them separately:

1. By far the commonest type is that which shows a generally red drum, with or without bulging, accompanied with fever, and sometimes pain; which on being incised promptly discharges a purulent, muco-purulent, or either of these with bloody fluid. This may discharge for twenty-four hours to several days and then stop. The drum heals promptly, returns to its natural bluish-gray color and the complication is ended.

2. The one which on opening does not heal in so short a time, but gradually drags on to a course of prolonged chronicity. In many of these cases the mastoid cells are undoubtedly involved, either from the beginning or as a secondary infection. Some of these cases eventually heal, while others continue to drain until the mastoid cells are thoroughly cleaned out.

3. The type in which the middle ear infection is followed very rapidly by acute mastoditis. This often occurs in spite of prompt incision of the tympanum with early drainage. These are the cases which are most apt to cause the serious cases of acute mastoiditis. Some observers lean to the opinion that such cases are in reality primary involvement of the mastoid cells, the inflamed drum occurring secondary to the mastoid infection. This I am unable to discuss. I do not think our observations are sufficient nor our knowledge exact enough to justify definite conclusions. Personally, I am inclined to doubt the theory.

4. A type which I have never seen except during the epidemic of influenza presented a red bulging drum which, on incision, emitted a single perle of thick tenacious glairy mucus, resembling grape pulp or cooked tapioca. This was expelled with evident force. In every instance of this kind on examination the following day the drum was found to be perfectly normal in appearance, even the incision having healed.

5. A type which is comparatively common is the drum which is red and not bulging, appears on inspection very much thickened. Its appearance is best described as that of red parchment. On incision these drums either bleed freely, scantily, or not at all, but show no evidence of discharge of pus or serum. These cases differ a great deal in their course. In some instances the incision is closed by the next day; in others it may remain open for a long time. Sometimes the drum remains red and thickened in appearance for days and weeks; or it quickly loses its inflamed appearance, but becomes a dull white, which, with the evident thickening, gives one the impression of white parchment. The general tendency in these cases is toward chronicity. Whether these are cases of inflammation limited to the drum itself—true myringitis—or are a part of a general middle ear infection without pus, I am not prepared to say. Most of them clear up very promptly with the removal of the adenoids.

6. A type which I have never seen before the past winter is the red drum with bulging, which on being incised is accompanied by an escape of air or gas, under pressure, with a distinct hissing sound. There was no purulent discharge in the two or three cases of this type I encountered.

7. Still another type, which I never saw before the past winter, shows what appears to be a generally inflamed drum with bulging over a limited area. This bulging, however, proved to be a bleb on the membrane, the underlying portion of the membrane remaining intact. These I consider cases of true myringitis.

8. A type which I have never seen, but which has been described several times in literature in the past few years, shows fever, a thickened drum, but one which is not red. On incision these drums discharge pus.

Mastoid involvement during the past epidemic of influenza was conspicuous by its rarity.

For years I used the ordinary speculum with the head mirror, but of late have used the DeZeng electrically lighted otoscope, which lights well, gives a clear field and has the advantage of an opening separate from that used for inspection, through which the dull ring curette or cotton applicator can be used for cleaning purposes without obstructing the view. Also through this opening an incision can be made under direct inspection. Generally, the otologists prefer the old style speculum, objecting to the magnifying lens of the DeZeng instrument. When one becomes

accustomed to this, however, the observations are quite as accurate.

The treatment of otitis media, uncomplicated by mastoid involvement, is comparatively simple, though the results are by no means always gratifying. I can see no rational reason for treating an otitis media by applications to the drum through the external auditory canal. Such applications may relieve pain temporarily, but I fail to see how they can do permanent good, since in the majority of instances there is pus in the middle ear. Some otologists claim that some inflammations subside under this procedure; we also know that many cases subside without any treatment, and I am quite sure I have seen more cases under this treatment eventually require an incision than I have seen cases subside under it.

I may appear somewhat radical in my ideas as to treatment, but I believe that most pediatricians agree that uniformly red drums, even without bulging, should be incised. In so many instances we find pus on incision in cases in which there is redness, even without bulging, that I feel it is better to be on the safe side. When seen early, and when we have an opportunity to watch the case closely, we may temporize. Of course, there can be no doubt that many inflamed membranes resolve without rupturing. We have all seen ear drums with marginal redness or little fan-like or wedge-shaped areas of inflammation—spreading toward the center, followed by general redness, which resolved in a short time. On the other hand, we have also examined drums with marginal redness only, which rupture and discharge pus before an examination on the next day. In cases of slightly red membranes it has been my custom to use nose drops of menthol, camphor and white oil, with the idea that such a mixture contracts the swollen mucous membrane at the inner opening of the Eustachian tube and thereby promotes drainage of the middle ear. I have thought this was often accomplished. Like many other things in medicine, I may have thought it did good when, as a matter of fact, the inflammation would have subsided in due time without treatment.

When cases of middle ear inflammation are accompanied by tenderness over the mastoid cells it is generally agreed that the drum should be cut under the supposition that drainage of the mastoid cells through the middle ear is promoted.

Conversely, then, why should not early incision be made, thereby promoting drainage and relieving pressure, thus preventing extension to these cells?

Many years ago the operation for appendicitis was considered a "last resort;" at the very time it was so considered a famous surgeon announced that every case of appendicitis should be operated on as soon as diagnosed, and he was ridiculed by many able men. His expressed opinion was merely prophetic of an accepted axiom of the next generation. Why doesn't the same rule apply in the case of inflammation of the middle ear?

DISCUSSION

Dr. Philip F. Barbour, Louisville, Ky.—It is true of us all that when we are able to recognize otitis media in a child and treat it properly, we save ourselves and save our patients a great deal of anxiety and sometimes even great danger.

The diagnosis of otitis media is not the easiest thing in the world. I had the pleasure of talking to my local society on the eye, ear, nose and throat diseases a few nights ago, and I made the statement then that I had had a number of the most prominent otologists in Louisville examine suspected cases and they reported there was no trouble in the ears and in two to six hours after that the drum membrane had ruptured and there was a free discharge of pus. I suppose that has been the experience of all of you. Let me make this explanation, that it is very difficult indeed in young children to get a good view of the drum membrane. In the second place, the drum membrane of a child is not nearly so apt to bulge as the drum membrane of an older person. The Eustachian tube becomes closed off by inflammation, and the air that is in the middle ear becomes absorbed, so that there is a distinct retraction of the drum membrane instead of a protrusion of it, even when pus is beginning to form the middle ear, and this has made it difficult for them to recognize that there was anything under pressure in behind the drum membrane. So for this reason I have had this experience of the drum membrane rupturing when the otologist least expected it.

One of the practical points that helps me in diagnosis of inflammation of the ear is tracing out the lymphatic circulation from the ear. We know that children respond to inflammations by enlargement of the lymphatic glands that drain that area. I have had my attention called to the ear in numberless cases after finding enlarged lymphatic glands just anterior to the ear, in the region of the parotid gland, or more frequently and more diagnostically the lymphatic glands back of the sternocleidomastoid and probably about the level of the third or fourth cervical vertebra. I can say that I have never found mid-

dle ear disease without finding these glands enlarged, and it has been a danger signal to me, and one that has given me a great deal of help in looking to the ear as the source of the trouble. Exactly the connection between the ear and these enlarged glands, I have not been able to learn from anatomists. However, it has given me great help in my diagnosis which has been confirmed afterward by opening the ear and encountering pus.

Dr. L. R. DeBuys, New Orleans, La.—We are prone to overlook the ear. The examination of the child should always be complete no matter what the outstanding condition might appear to be. The ear, therefore, should be thoroughly examined always and a full knowledge of the appearance of the normal ear should be had in order to appreciate the appearance of the ear when it is abnormal.

In the epidemic of influenza during the past year, I did not have the experience of that of our chairman, as I saw no cases of mastoiditis.

I was impressed during the last epidemic with the number of red drums even swollen, which, when opened, showed no pus. We frequently find when the drum is red and there is evidence of pressure within the middle ear, that there is an obstruction to the free ventilation of air in the middle ear; and whatever toxins may be present, as well as pus, it is under pressure, and these toxins under pressure give rise to a considerable elevation of temperature. In these cases when the drum is incised and the pressure relieved, there is an improvement in the symptoms, particularly the temperature after probably a reactionary rise incident to the paracentesis.

It has not been my experience to see retracted drums with pus. I can only picture in my mind a retracted drum existing when there is an obtruction to the free ventilation of air and a vacuum produced.

With regard to the external treatment, good results seem to be produced when much congestion exists if a few drops of the adrenalin solution are added to the phenol and glycerin. By constricting the blood vessels in the immediate vcinity, hyperemia is reduced, congestion relieved and a more rapid return to the normal produced.

Dr. Robert T. Lynch, New Orleans, La.—The red drum which we see in influenza cases, as well as in a good many of these infections, is due to one of two conditions, either to sudden obstruction of the Eustachian tube, or the traveling of the inflammatory product by contiguity through the Eustachian tube. In these cases one or two things occur, sudden blocking of the Eustachian tube with retraction of the drum, so that it is impossible to have fluid in the impaction, and, therefore, these cases do not have pus. In the other cases, where the infection travels up the membrane by contiguity of tissue, opening the drum is not followed by the immediate subsidence of the inflammatory symptoms, or of temperature, or of constitutional symptoms, because the inflammatory condition is traveling very much like erysipelas does through the tissues rather than along the mucous membrane. Where the chairman spoke of the red drum slightly bulging, opening the drum and allowing the muco-purulent material to be evacuated, those are the cases where a sudden closure of the Eustachian tube takes place, with rapid effusion of sero-mucous material into the middle ear, and opening of the drum and allowing this accumulation to be evacuated, the condition will subside as he described. The red drum which is opened, where the opening is persistent after tympanotomy is done, in most instances is due to streptococcic infection, and a culture of the case will disclose very frequently the streptotcoccus mucosus predominating. These are the cases wherein the delayed mastoid and atypical mastoid brain abscesses and meningitis are likely to occur. We saw that in our experience with influenza cases. It is due to a sudden closure of the Eustachian tube, and one sees the patient before the circulation has had time to absorb the pent-up air, or there occurs a valve-like action of the Eustachian tube on account of the swelling. On degultition the Eustachian tube opens up, air gets in and cannot escape, and hence the drum bulges out markedly. The drum is usually white and has not that typical redness characteristic of acute inflammatory conditions. Tympanotomy is often followed by relief and retraction of the drum, with subsidence of the pathology very promptly. The blebs that occur on the drum membrane and on the ear canal are almost pathognomonic of grippal infections. These blebs are either serous or hemorrhagic, and usually indicate a very serious type of infection demanding free tympanotomy and a mastoid operation on the first provocation of evidence of tenderness over the mastoid.

Dr. H. F. Helmholz, Evanston, Ill.—Our experience in Chicago is considerably at variance with that of the speaker's. We had practically no otitis media in our grip epidemic, nor did we have any glandular enlargement. It was surprising to see the height of the temperature, which ran from 104 to 106° for one or two weeks, with nothing, but a red throat, without the slightest involvement of the glands and without any ear complication. I do not believe that during that first grip epidemic I had a single ear opened. On the other hand, with each recrudescence we had more ear infections.

With regard to the red drum, I would differ slightly from our Chairman with regard to the charge that these red drums cause temperature. I think all of us, if we examine ears regularly during infections of the upper respiratory tract, find that in practically all cases there is some involvement of the ear. There is some slight redness of the ear. It seems to me, when you get this early redness with a gradual subsidence of the temperature, it is perfectly justifiable to let the ear condition take care of itself. If, on the other hand, the condition begins to clear up and the temperature remains, and the redness of the drum persists, in those cases the drum ought to be incised.

Just one other word with regard to the temperature. It is surprising in these cases, where the infection is due to an infection in the middle ear, how in this early stage the temperature frequently persists for two or three days. I think that where the ear is opened early this is very likely to be the case, and is not an indication of

a mastoid involvement that needs operation as it is so frequently interpreted.

Dr. L. T. Royster, Norfolk, Va. (closing)—With reference to the remarks made by Dr. Helmholz, many of the drums I spoke about were in hospital work, the patients having been examined daily by me, and there was no suspicion of redness during the acute stage of influenza. That is why I emphasized the point. It was more frequent after the subsidence of all symptoms that this came on. It was quite unusual in my experience to see it in the early stage of influenza. It is usual in the acute stage of naso-pharyngitis and other conditions. I have watched these cases twice daily throughout their hospital stay without seeing any evidence or suspicion of redness, and frequently the patient was sitting up and going about.

My paper was strictly clinical and not etiological. I did not touch upon the pathology.

I do not remember whether Dr. DeBuys said that he had seen very few cases of mastoid involvement or many of them.

Dr. DeBuys. I have not seen any.

Dr. Royster. I saw only three or four during all this time. I did not mean to convey the idea that there was immediate relief of all symptoms as soon as the drum was ruptured or incised. But I do want to bring out this point, although it should not be necessary to a body of pediatricians, namely, I have seen some pediatrists who admitted they could not use the otoscope. I have had a number of men who are doing pediatrics exclusively admit that. I wanted to bring out that point, and if I have done nothing but emphasize the importance of the fact that no man, I do not care who he is, whether he is a pediatrist, or general practitioner, who cannot use the otoscope, or can not have one used immediately, has no right to attempt a diagnosis.

DOUBTS, DIFFERENCES AND DIFFICULTIES IN DIAGNOSIS OF GASTRO-INTESTINAL DISEASES*

By J. C. Johnson, M.D.,
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It is often remarked that there are two sides to every question—meaning that we all may be partly right and partly wrong about everything. This is true as it applies to human understanding, but the figure of speech is neither apt nor accurate when it is used to mean that truth of any sort can be divided and yet remain the same in force or in effectiveness.

Before the law no testimony is competent unless the witness tells the truth, the whole truth and nothing but the truth. As in law so it is in all matters of debate, if we would reach a just and reasonable conclusion.

Nevertheless, since time began, men have differed in their opinions about the truth in art, in science, and in all that pertains to human life. Even the medical profession has not agreed upon many things. In nothing, perhaps, has it differed more than in regard to the pathology of gastro-intestinal diseases. There is a reason for this difference and we believe this reason can be found in the viewpoint. It is with reference to this viewpoint that we want to speak today. Hence the title of the paper.

A gastro-enterologist always has more difficulty and more room for doubt in diagnosis than one who has had less experience with gastro-intestinal diseases and less observation of results. The cause of this advantage on the one hand and disadvantage on the other will not be recognized, or removed, until the whole profession has an even range of vision and stands upon the common ground of fundamental medicine.

The word diagnosis, as used here, is not intended to refer to the mere naming of a disease, but to the recognition of all the processes which have to do with the origin, development and course of a disease. If this definition is correct, we must at once admit that it is impossible to make a perfect diagnosis in any case, for there is no way of discovering when and exactly how the trouble began and entirely what has favored its production and encouraged its progress. For this reason it must also be observed that no intelligent diagnosis can be permanent, for the disease is constantly changing, if not in its essential nature, yet in its proportion, and in its constructive and destructive effects upon the animal economy.

When we speak of gastro-intestinal diseases, we have in mind no particular type or degree. If we may proceed upon this ground as a basis for discussion, there is no disease in our accepted classification whose name clearly indicates its past, present or future pathology. We have become so familiar with the terms, gastritis, colitis, appendicitis, gall-stones and the like, and they have been given such positive and prominent place in medical

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thought it is easy to forget that these troubles are only manifestations of active processes which really constitute the diseases whose title they falsely represent. There is no contradiction of this in any quarter until diagnosis and treatment come into question. Then there is a difference of opinion, doubt is all on one side, and the only difficulty is the gastro-enterologist.

So zealous and consistent have been the advocates of the doctrine which has been responsible for this difference, which is so immune to doubt, and which has so easily localized the difficulty that time and again I have fairly asked myself, if, in theory and in practice, they are right and we are wrong. This question can be answered without reference to individual observation or experience, and without disregard of any principle upon which the structure of medicine is built; and so it should be answered by every one who undertakes to do gastro-enterological work.

There is a very practical way of getting at the origin of these doubts and differences in diagnosis. First, facts must be viewed as they naturally present themselves. By naturally presenting themselves, we mean the orderly and consistent expression of pathological action as a part and sequence of physiological perversion. It matters not the disease, nor the doctor. There can be no reasonable objection to a diagnosis which corresponds with this procedure.

We often hear it said that one disease has caused another. If all the features of both diseases were recognized, it might appear that just the opposite is true. The co-existence of diseases is not sufficient to establish their exact relationship. The fact may be that neither of the diseases under observation is entitled to primary classification, but are issues of a deeper, more obscure and complicated process. What we wish to indicate is that we can not make a reliable diagnosis without all the evidence in the case, and this evidence is never wholly palpable to the touch, visible to the eye, or within easy reach of the most fertile imagination.

One of the greatest difficulties in diagnosis is beginning it, and I know of no better starting point than the point where all diseases start, viz., in local perverted vascular action. It used to be taught in the principles and practice of surgery, "*ubi irritatio ibi fluxus; ubi fluxus, ibi stasis; ubi stasis; ibi phlogos.*" So far as I know, the teaching and practice may have changed, but I presume that the principles have remained the same. Certainly, there can be no abnormal tissue metamorphosis without abnormal circulation in the part. And there can be no abnormal circulation without disturbance of osmosis. Continued disturbance of osmosis leads to stasis, and with stasis normal function is impossible, and organic change inevitable. The surgeon has all this in mind, or should have, when he drains the gall-bladder, breaks up adhesions and performs a gastro-enterostomy. But while stasis is an important feature of disease, it is never an independent factor. It is always the result of something else, and, in diagnosis, is never to be counted as a primary cause.

Diagnosis is usually begun by the study of subjective symptoms. Considering the variety of gastro-intestinal diseases, these symptoms are very few in number, and are so closely akin, and so often present in the same disease, the possibility of a single morbid process is suggested as the cause of them all. But this is not so. The limitation and association of these symptoms can be explained by the paucity of sensory functions—a provision of Nature like that of the organs of voice for all manner of speech, and of hearing for all sorts of sound. In this example of animal economy we have also a standard for our present study.

The subjective symptoms are too well known to enumerate here. Their importance may be overestimated or underestimated. A complete diagnosis can not be made by any or all of them combined. One is often reported when another is meant, and one may appear to be the cause of others, but this is never so. The cause of the one is usually the primary cause of all that are present in the same disease.

Pain is the most common, and is generally considered the most reliable symptom in diagnosis. Its attractiveness often gives it a fictitious value, and renders it more liable to misinterpretation. So with nausea and vomiting. Especially are we prone to err if we hold one symptom separate from another. The value of any subjective symptom is doubtful when we are ignorant of the condition from which

it arises. Surgeons, I believe, endeavor to explain these symptoms, if confined to the stomach, by the phenomena of reflex action. Reflex action is the one physiological process which has not lost prestige by time and use. It is true that reflex sensations and motions do occur in disease as much as they occur in health; but the difficulty is in deciding whether these motions and sensations are normal or abnormal in origin, and, if the latter, by what means are they abnormal, and in what particular do they differ from the normal in character and in conduct. The stimulus to a reflex normal in degree may originate as well in the organ in which the final action occurs as in some other organ, and it is more natural for this to happen. The same is true of abnormal reflex. But the abnormal thus occurring is more difficult to recognize for the reason that the disease which causes it is not always confined to one organ, and hence the reflex is not simple in character. It is not only difficult to distinguish between one form of reflex and another; it is impossible to determine the cause and define the character of any reflex without positive knowledge of the anatomical relation of the alimentary organs. Besides, a reflex sensation is often modified by change of position, and by its intensity may be mistaken for a complicated process. But more worthy of consideration than all this is the fact that reflex action can no more transfer a disease from one organ to another than can a mirror move an object from one place to another. In any event, there is more involved in disease than sensory susceptibility, or the anatomical relation of an organ. The condition is the surest index of the pathology, for condition is the product of function, the one independent property of all tissue.

When we speak of reciprocal action between digestive organs the way is opened for more agreement than now exists. But the law of reciprocal action does not modify the principles we have mentioned. On the contrary, it magnifies their importance, for it is by reciprocation that coordination is established and maintained. Reciprocal action between the stomach, duodenum and the liver best illustrates what we are trying to make clear. Disturbance of reciprocity between these organs is one of the most fertile sources of disease in the alimentary tract, and any diagnosis which overlooks it or underestimates it as a factor is more difficult and doubtful. It is also important to consider the basis and beginning of this reciprocity.

Whatever first disturbs reciprocity between organs, the impulse is felt primarily by the chemical function of one or the other; for every organic change, even that incident and indispensable to the smallest function, animal or otherwise, is initiated by chemical action. Even an electrical stimulus is nil without responsive chemical change. Disease can not develop from molecular movement alone, such as found in muscular contraction or in intra or extra cellular pressure, from any cause. Therefore, the primary pathological process is always chemical. For example, the normal acid chyme incites the duodenum with all its native and accessory juices. Reaction in the duodenum largely controls the opening and closing of the pylorus, and the flow of bile. In hyperchlorhydria, there is hypertension in the duodenum, for reasons which are obvious if foregoing conclusions are correct. For these reasons also the food does not leave the stomach promptly as it should. The hypertension in the duodenum overcomes the normal pressure in the biliary ducts, and another factor is added to the morbid process. In subacidity or achylia there is hypotension in the duodenum, the food leaves the stomach too rapidly, and there is neither the normal stimulus to the duodenum nor to the biliary flow. We need only apply these facts to other kindred facts, all well known, in order to visualize the development of diseases in the digestive organs. But with our present purpose it brings us back to stasis, which is one of the first essentials to diseases of the gall-bladder. Without stasis there would be no gallstones, cholecystitis or self-imposed adhesions.

In giving proper regard to reciprocal action in diagnosis it should not be confused with any doubtful pathological process which has its origin in some distant organ whose function is not known, and whose presence or absence has no apparent influence on the nutritive or functional power of other organs.

One of the easiest ways to make a diagnosis is to call the disease a neurosis. In some very difficult and doubtful cases the

temptation to do this is strong, sometimes almost irresistible. But the doubt remains, and the difficulty increases unless we are able to locate the cause and define the pathology of the neurosis. We are very apt to fail in this particular unless we look for some simple beginning and some primary process which are so harmonized in their perversion that they leave no trace of their development, but a lack of vital equilibrium. It is in such cases that surgery is most conspicuously unsuccessful. A diagnosis of such a disease may be made, but not denominated. If I have ever satisfactorily explained a neurosis to a patient or to myself, I have no record of it.

There is no single symptom of a neurosis which indicates the complex pathology underlying it, nor is the nervous system sufficiently independent in nutritive or functional activity to originate a condition which, in strict terms, can be called pathological. I would not be understood as even questioning neurosis as a dominant feature in some stages of some diseases in some patients, but I doubt very seriously the possibility of any neurosis being a primary pathological process.

We find bacilli and micrococci in organs that are diseased, and their presence in one locality favors their invasion of another. There is little reason to doubt that many diseases owe their gross pathology to infection, but it may be questioned if our present knowledge of bacteriology warrants the assumption that any infection can be either a primary disease within itself or the primary cause of any other disease. We believe that the too ready acceptance of the present theory of infection may obscure many important points in diagnosis. Moreover, infection is not easy when the digestive juices are normal and the mucous and muscular coats are unimpaired. Else, localization of the infection would be the exception and not the rule and the removal of the supposed focus would be followed by relief from the symptoms for which the operation was performed. Such is not always the case. It is amazing how any one can doubt the significance of this or fail to acknowledge the need of thorough examination to interpret it.

It has been remarked by one of large experience and much learning that to know that a patient has an ulcer one must see it. This is less reasonable than to say that to know a patient has a pain you must feel it, or that nephritis can be discovered only by exposing the kidney. Our education is acquired by exercise of all the senses and our judgment is matured by experience. We are thus relieved of tasting everything to know that it is fit to eat, and of drinking all the water in the world to know that every drop of it is wet.

Fortunately, there are ways and means of making diagnosis without laparotomy. I need not mention them in this company. It is enough to say that these means are useful, and these ways are clear, only in the light of that knowledge of physiology and pathology which has come, not from recognition of objects and events, but from careful study of successive processes, primary in their origin, in their perversion, and in their results.

SOME FACTS AND FALLACIES RELATING TO MATERNAL FEEDING OF INFANTS*

By J. D. Love, M.D.,
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In the field of medical practice probably more frequently than elsewhere are serious errors made in connection with (1) premature withdrawal of the infant from the mother's breast, (2) conclusions from laboratory examination of breast milk, and (3) dieting of the mother to overcome defects in her milk supply. That errors in this connection are fraught with immediately grave consequences to the infant and that their results are more far-reaching than is generally appreciated render a discussion of this subject of peculiar interest to physicians superintending the early feeding of infants.

All too frequently we see infants permanently removed from the breast on account of digestive disturbance attributed to "rich milk," when, as a matter of fact, the milk was not rich but owed its macroscopic appearance of richness to an excessive amount of colostrum and no cognizance had been taken of the fact that

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not infrequently colostrum milk persists over an excessive period of time. In these instances a microscopic examination of the milk would have revealed the offending cause which possibly through dietetic and hygienic management could have been made to disappear. We have seen the fretful baby taken from the breast because the milk was bluish white in appearance and suggested a deficiency of solids. I would emphasize the fact that in estimating the suitability of milk for the infant, little or no reliance can be placed on its color or absence of color. I have frequently seen bluish, opalescent milk that on chemical examination showed an abundance of solid constituents and have seen yellow and apparently rich milk that was too lacking in fat for the baby's proper nutrition. In this connection we may bear in mind that the opalescent appearance of breast milk may be due to a more complete solution of its salts than is true with cow's milk. Almost daily we see poorly nourished infants who were withdrawn from the breast because of a scant supply of milk which, however, was not proven to be deficient in quality. Rarely do physicians or mothers commit a more unpardonable blunder than this; for even the scant milk secretion available is probably far better for the baby than anything the physician in his supreme self-confidence can provide as a substitute. Besides it is a well established fact that even a little breast milk is of assistance to the baby in the digestion and assimilation of supplemental feedings. I trust that in this connection it is useless to protest against the practice of giving to the baby substitute rather than supplemental feedings, nor should it be necessary to advocate the nursing of the baby from both breasts at comparatively frequent intervals when there is evidently a scant supply of milk.

Another mistaken though less reprehensible reason for premature weaning, because based on some intellectual endeavor, consists in erroneous interpretation of laboratory reports as to composition of breast milk. And in this connection I would insist that the examination of milk by the ordinary lactometer methods is so misleading that it can not be regarded as an asset of great value to our medical armamentarium. These findings must be regarded as merely contributory evidence to be considered in connection with many other factors. Rarely, if ever, should a chemical examination of milk alone influence our decision as to the suitability of breast milk. Talbot has pointed out that in specimens of breast milk taken before and after nursing there may be a variation in the fat content up to as high as 10 per cent. Unless we constantly bear in mind the physiological differences in specimens of breast milk as influenced by several factors and recognize what constitutes the limit of normal variations, any conclusions deduced from chemical examination of milk are apt to be faulty.

Irrespective of laboratory findings, a milk is good or bad in accordance with whether or not the baby is digesting that milk and thriving. Occasionally it is true that when the infant is failing to gain and shows evidence of digestive disturbance, a chemical examination of the milk may afford us a clue as to its abnormality and often is confirmatory of conclusions based on clinical symptoms. Even then before condemning the milk as unfit for the baby's consumption we must be sure that the specimens of milk have been collected properly, at the proper time of day, and must be assured from microscopic examination that the fault does not lie in an excessive number of colostrum bodies. Unfortunately, our laboratory methods throw no light on certain biological factors which are the most frequent causes of digestive disturbance of both simple and grave nature. The milk of the neurotic, fatigued, anxious, distressed or emotional mother may be such as to measure up in quality to the most approved laboratory standards, yet be of such quality as to provoke the most serious digestive disorders of the young infant.

However, no matter what the source of our conclusions, in a certain number of instances we are driven to the decision that the fault in the breast milk lies in excess or deficiencies of one or more of its components or that the milk constituents exist in unnatural proportions.

As far back as pediatric literature extends it has been the tendency of medical men to assign as a chief cause for indigestible milk a faulty diet on the part of the mother and to bend their energies to a correction or modification of her dietary. Such is still our tendency, notwithstanding

the very negligible and disappointing results that in most cases attend our efforts. It is of frequent occurrence that we see a mother who is being actually starved because her milk is supposed to be too rich in fat. Yet Voit has shown in his experiment on dogs that it is during a period of starvation that the fat content of the milk was increased to its highest percentage. This idea is supported by Lusk, who believes that the fat of milk is at least largely produced by a system of infiltration and that during starvation the blood becomes rich in fat on account of the transportation of tissue fat to the cells. If these facts are true, what a colossal blunder we commit when we attempt to reduce the fat content of milk by starving the mother. Again it is an undoubted impression shared by most of us that articles of diet that produce fat in the mother will likewise increase the fat content of her milk! Following this line of reasoning we have forbidden or curtailed the eating of carbohydrates by a mother who is producing a milk too rich in fat. That this also may be a serious blunder is suggested by the statement of Lusk that where the baby's indigestion is due to a large percentage of fat, a carbohydrate diet may be used to reduce the percentage in the milk. In this connection I would again refer to the teaching of Lusk, who suggests very properly that where the fat content of milk is causing indigestion, the trouble may be due to the kind of fat rather than the quantity ingested by the mother.

In outlining a diet for the mother who is producing a milk too rich in fat, not a few of us forbid the drinking of milk to any considerable extent, yet Griffith contends that a large amount of liquid consumed by the mother is liable merely to dilute the infant's food and that cow's milk given to the mother offers no advantage over weak tea or water, provided she is already well nourished. If this be true, what an agency we have in cow's milk both to satisfy the mother's appetite and, by lowering the percentage of solids in her milk, correct an indigestion due to over-rich milk.

It is now admitted that much that has been written and taught concerning the diet of the nursing mother must be discarded as untrue. Undoubtedly certain articles of diet do harm in certain cases, but it by no means follows that these same articles of diet should be forbidden in other cases. In the feeding of infants we have learned to discard all so-called systems and to feed the individual baby in accordance with its needs and digestive capacity. Till we learn to individualize in the case of feeding the nursing mother, we will be disappointed in results secured, no matter what system or whose teaching we follow.

As concerns the mother's dietary, the only general rule I know, susceptible as it is to modification, is that it should consist of food generous in quantity, easily digested and above all a food to which she is accustomed. We may regard it as axiomatic that a food that causes indigestion in the mother will cause trouble for her nursing baby. And, on the other hand, if a mother can well handle even the most indigestible food, her baby will rarely suffer in consequence. We have daily proof of this in the instances of our colored population and indeed many whites also. At no time is much attention paid to the dietary of the colored mother and she eats what she has, what she craves and what she has been accustomed to. That such articles as fat bacon, cabbage, corn-bread and molasses constitute the bulk of her daily menu seems to make no difference to her baby, which continues more immune to colic than the offspring of any other class of our population. Possibly no race of people in this country are so little given to worry, anxiety, mental and physical fatigue as the colored. Possibly no race eat as coarse food and, despite this, possibly no race numbers among its population such excellent wet nurses. The explanation of this is so self-evident that it is scarcely necessary to mention that the source of the vast majority of the digestive disturbances of breast-fed infants can be attributed to milk rendered unfit for use by causes apart from the mother's dietary. In looking for causes that produce abnormal breast milk, the maternal dietary may be regarded as of secondary importance to those disturbing factors which produce derangements of her nervous organization.

It is not in the province of this paper to discuss the measures to be employed for improving a nervous condition originating in worry, anxiety, mental and physical fa-

tigue, emotion, physical and psychic excesses, and the numberless trials and vexing problems incident to domestic duties and difficulties. The recognition of the disturbing element may often suggest the means of its removal, or, if this is not within our power, we may at least be enabled to offer to the mother help and counsel that is based on knowledge of those causes which are preventing her from becoming a successful nurse.

SUMMARY

The gross appearance of breast milk furnishes but an unreliable index as to its suitability for the baby. Before pronouncing milk as being too rich in quality, the presence or absence of colostrum bodies should have been determined by microscopic examination. The mere fact that milk is scant in quantity furnishes no valid excuse for the withdrawal of the infant from the breast, but rather calls for supplemental feedings.

Conclusions drawn from chemical examinations of breast milk, as usually practiced, are apt to be misleading. Laboratory findings should confirm clinical observation.

In influencing the quality of breast milk the maternal dietary, while of some importance, is a smaller factor than causes which operate through the medium of the mother's nervous system.

DISCUSSION

Dr. W. L. Funkhouser, Atlanta, Ga.—Eleven years ago the Section on Diseases of Children of the American Medical Association passed a resolution requesting the Program Committee to have each year a paper on breast feeding. No meeting of pediatricians is complete without our going on record endorsing maternal nursing. We may vary widely as to our methods of feeding artificially, but we are all one in encouraging the maintenance of breast milk for the feeding of infants. Dr. Love, therefore, voices the sentiments of all present today in his plea for breast milk feeding. It is incumbent upon us more than ever to encourage maternal breast feeding, if we would ourselves reduce infant mortality. Breast feeding is one of the greatest factors in this respect. We talk too much about feeding babies artificially, we should spend more time in encouraging the general practitioner and obstetrician to devote more of their attention and energy in conserving the breast, calling in the pediatrician then rather than weaning the baby and placing it upon proprietary foods, developing intolerance for some element in the food. A complemental or supplemental feeding of breast milk will increase the child's tolerance for the various food elements, in our modifications so that we can successfully give a combination which, without this small amount of breast food, would fail. It behooves us to utilize the breast exclusively, if possible, and failing to do so we should make use of all breast milk at our disposal, or in certain cases we may be called upon to use wet nurses. We are surprised to see the milk return to the breast in some cases after the baby has been weaned for some time. The two greatest factors in the maintenance of breast milk are confidence and contentment.

Dr. R. M. Pollitzer, Charleston, S. C.—I have seen three children in the last year that were taken off the breast and put on various foods unsuccessfully, and as a consequence the children developed a considerable degree of malnutrition. The history of those cases was that they were doing fairly well on breast feeding, barring a slight amount of colic and a little irritation. Weaning should be considered as a matter of duty because a life is at stake.

People frequently wean babies because of skin affections. A baby will develop a slight skin affection from the mother's milk, and on account of it the child is taken off the breast.

We have gone too far in the way of laboratories, and the most important thing about milk we do not find out with a test tube, or a burette. The prospective mother, who is living a proper life, and eating food she likes, is apt to give good milk. To look at it and make a physical analysis is all right, but nothing need be done about it. It is just as important to consider too early weaning as it is too late weaning. All of us have seen babies that were nursed entirely too long. I am heartily in favor of gradual weaning and supplementary feeding. These are well marked advances, gradually getting the baby accustomed to one bottle and two bottles rather than to make a change all in one day.

Most mothers are willing to nurse their babies, yet there are certain mothers who are fond of attending parties and socials and tired of nursing their babies and want to start artificial feeding. No baby should be sacrificed to the mother's will.

Dr. S. Josephine Baker, New York City.—One of the interesting points in this discussion which perhaps has not been brought out is the mother's inability or ability to nurse her child. There is a wide difference of opinion as to the ability of the mother to nurse her baby. It is possible that this inability increases the higher one ascends in the social scale, but I am inclined to doubt it. A well-known pediatrician gave the opinion a short time ago that only fifty per cent of women could breast-feed their babies. Our experience with about sixty thousand babies a year in New York City has shown at least ninety per cent. There is no question about that. In the baby health stations where the sixty thousand babies are cared for, we started five or six years ago without one single breast-fed baby. After many years of educational work, sixty-five per cent of the mothers who came to the baby health stations for advice and instruction were nursing their babies.

You are doubtless all familiar with the work of Dr. Sedgwick, of Minneapolis, in restoring the function of breast feeding in instances where women had not nursed their infants for a definite

period of time. Another interesting point was the relation of starvation of the mother to the quality of the breast milk. The only time Paris ever had a low infant mortality rate was during the Seige of Paris when no cows' milk could be had and infants were, therefore, nursed at the breast. As a result, infant mortality went down to a rate so low that it has not been equalled since. A doctor from Belgium reported recently that during the period of the war Belgium had no milk for infant feeding except what was sent there from this country, and mothers were forced to nurse their infants. It is not surprising, therefore, that during the war Belgium had the lowest infant mortality rate in its history. There is no question that the great majority of women can nurse their own babies if they choose to do so.

Dr. L. R. DeBuys, New Orleans, La.—Dr. Baker referred to the willingness of mothers to nurse their babies. In New Orleans the higher women are in the social scale, the more willing they are to nurse their babies. I remember in this connection that several years ago one mother went through the greatest pains I ever observed in attempting it. She had fissured nipples, and insisted on continuing the nursing.

The best guide to the success of nursing is the progress of the baby. The nursing mother should have the diet to which she is accustomed. But when a mother is nursing her baby, she has two to feed instead of one, and, besides her regular diet, she should receive an extra amount of food to meet the requirements of the baby.

Dr. Oliver W. Hill, Knoxville, Tenn.—I wish to take issue with Dr. Baker relative to the disinclination of the mother to nurse her baby. My observation in a town of 100,000 people is that the higher women are in the social scale, the more inclined they are to nurse their babies.

Another thing Dr. Love did not emphasize is, that when we find mothers who are not able to nurse their babies, if we will go back over their lives we will find there is some good reason for it. I recall one case in a wealthy family. The woman had called in a number of physicians, and it was said that she could not nurse her baby because the child had colic. I so adjusted her diet that she was able to nurse the baby and to resume a normal outdoor life. If I find conditions are such that a mother cannot nurse her baby, I do the best I can for her in feeding her baby. I make my living feeding babies, and if every mother nursed her baby, I would have to do something else, because there would not be enough sick babies to justify the practice of pediatrics. We should bear in mind that if babies are given half a chance, you can bring them around. As a rule, the higher women are in the social scale, the more intelligent they are, but we must remember there are mothers who are away from their babies a good deal of the time during the day on account of the necessity of having to earn a living. In such cases we must resort to artificial methods of feeding. A mother may desire to nurse her baby, but she may not be able to do it more than twice a day on account of her duties. The best plan for this, we must work out.

Dr. S. Josephine Baker.—I was misunderstood. I did not say that mothers were unwilling to nurse their babies, but I spoke of their inability to do so. It has not been my impression that mothers are unwilling to nurse their babies. It is a question of whether or not they can do so. My impression is that at least 90 per cent of mothers can nurse their babies, provided they are willing to do it.

Dr. W. A. Mulherin, Augusta, Ga.—Dr. Sedgwick, of Minneapolis, in his recent records has clearly shown that if mothers will nurse their babies, first allowing the babies to nurse all the milk they can possibly get, and then follow with a complemental artificial feeding, the breast will secrete more and more milk, until finally the artificial feeding can be discontinued. In this connection Sedgwick emphasizes the importance of emptying the breast by manual manipulation after each nursing. I am of the same belief as Dr. Sedgwick, that only in extremely rare cases, where there is a direct contra-indication tuberculosis, abscess of the breast, profound weakness, eclampsia, hemorrhage, sepsis — should a baby be denied the breast. If more babies were given mixed feedings, that is, allowed to nurse the breast, and then given a complemental artificial feeding, we would have less trouble with infant feeding. It is surprising to note how the breast milk increases in quantity, and there is gradually less need for artificial feeding, when this mixed method of feeding is practiced.

I wish to speak most emphatically against the method of alternating the breast and artificial feeding. When a baby is given the breast at one feeding, and the bottle the next feeding, the breast almost invariably secretes less and less milk, until finally we have a strictly artificially-fed child. It is absolutely wrong to practice this alternate feeding, when the breast feeding, with a complemental feeding following, produces such excellent results. There is another point that I think attention should be called to, in discussing this subject, I cannot understand why our leading textbooks on pediatrics will, in every new edition, state that an indication for immediate weaning is intercurrency of pregnancy. I am quite sure the leading pediatricians do not practice this, unless there be some toxemia of pregnancy. Personally I slowly wean such cases, recognizing the fact that pregnancy does weaken the milk. I have uniformly obtained good results. On the other hand I have seen babies suddenly weaned in hot summer months, with resulting bowel trouble, and in some cases death resulting. I feel quite sure that no one in this assembly subscribes to the erroneous idea that has been so generally prevalent, that poisonous substances are generated in mothers' milk by pregnancy.

We have much to learn about the great value and protective powers of mother's milk. I recall three cases of typhoid fever in nursing mothers that may be of interest. I was called in consultation to see a child who was nursing a mother with typhoid fever. It was in the country, in summer-time, poverty existed, no ice, and the environments were anything but sanitary. The mother had been ill some ten or twelve days. The baby's blood showed a positive Widal. I advised that the baby continue at the breast, as the mother's case was rather a mild one and the breasts were secreting well. The mother recovered, and the baby did not contract typhoid fever. Another

case of typhoid came into our Children's Hospital, where a mother had been ill some ten days before the diagnosis was made. In the meantime the baby of six months had been nursing the breast with no ill effects. Both the baby's and mother's blood showed positive Widal. The case was not a severe one and the baby was allowed to nurse and given a complemental feeding. The mother recovered and the baby did not contract typhoid fever. Another similar case, seen in consultation, was a mother who had been ill twelve days with typhoid fever before a positive diagnosis with the Widal test was made. The case was a rather mild one, with the breasts secreting generously, and the baby about seven months of age. The baby's blood showed a positive Widal. The baby was kept at the breast, with no artificial feeding, and the mother and baby went through the trouble with no ill results.

There is another point in Dr. Love's paper worthy of emphasis, and that is regarding the nursing mother's diet. With the general practitioner, and the laity, the idea prevails that certain foods cause colic and indigestion in the baby. We all know that a nursing mother needs a generous, nutritious diet, to enable her to look after the proper development of her baby, and to meet her physical needs. Furthermore, we know that food that does not cause indigestion in the mother will not cause indigestion in the baby. In this connection, I recall a very excellent paper read by Dr. Hoobler, of Detroit, at an American Pediatric Society meeting, in which he gave the result of a series of analyses showing that mother's milk could be influenced by diet to the point of producing a more generous supply of milk, as well as a better grade of milk, by having the protein element of the mother's food relatively high. If I recall correctly the ratio of proteins to fats and carbohydrates was about 1 to 5. Practically expressed, this means that if we will insist upon nursing mothers drinking a quart of milk a day, and eating two eggs for breakfast, and meats for dinner and supper, in addition to their regular diet, it will produce more milk and likewise a better grade of milk.

Dr. H. F. Helmholz, Evanston, Ill.—I should like to emphasize one point and that is the complete emptying of the breast. This is the most important single point in keeping up the milk supply, and if the infant cannot do it, the mother should help out manually.

Dr. L. E. Bisch, Asheville, N. C.—I practice neuro-psychiatry. While in New York I saw a few mothers who wanted me to give them my approval to discontinue breast feeding. They wanted me to declare them nervously unfit to fulfill their natural obligations. All were disinclined to continue nursing, although they were absolutely capable of so doing. It seems to me to be beyond question that mothers do exist who are perfectly able to nurse their babies, but who simply do not desire it. You will find these women in the larger cities perhaps more than in smaller places.

When the matter of social scale was brought up in the discussion, it should have been somewhat modified and more accurately defined. It is not the social scale which is so much at fault and which is used as an excuse among the wealthy for not nursing their babies, but it is rather the nervous scale. There is no doubt that the higher the intelligence of the female, the greater the tendency to become unstable and neurotic, and the more neurotic she becomes, the less is the tendency and the ability to feed her own baby. You pediatricians have a difficult job with women who cannot or will not feed their babies. The woman who is fully capable but who does not want to feed her own baby may have something radically wrong with her mental and nervous make-up which demands treatment.

Dr. N. P. Boddie, Durham, N. C.—Many of our prospective mothers have a poor development of the milk glands. Especially do I find trouble in getting the infant to nurse at the breast in the beginning. The mothers have poorly developed milk glands and poorer developed nipples. If we emphasized that fact and could do something toward bringing about the development of the milk gland, we might accomplish great good. No part of the human body will develop, unless there is some stimulation or exercise of it. Massage of the milk gland is one thing that ought to be emphasized to the prospective mother. Very few of our young women have these glands well developed. A great many are as flat-chested or more so, than men.

Dr. I. W. Faison, Charlotte, N. C.—The trouble is not the women who do not want to nurse their babies, but the women who do not want any more babies. When I practiced obstetrics, I have had women turn the baby over to the nurse to put in a nursery and say to me: "I never want to see the baby, and I am not going to nurse it." My reply has been, "If you do not nurse the baby, you are not going to see me any more."

Feeding has something to do with the milk of the mother. Within the last ten days I have had a woman whose milk contained nine and six-tenths per cent. fat. Most of these women do not take any exercise. A woman who is nursing her baby ought to take a four-mile walk a day, and she ought to eat in proportion food that does not make fat. Let the walking exercises through the process of metabolism burn up the extra fat in her and not let it go to the baby. When the baby is vomiting, the chances are you will find there is too much fat.

Dr. Love spoke of the colored race in Jacksonville. In the great majority of colored families in my town rickets in the children abounds, and if you want a woman to have pellagra, feed her fat meat and cereals. If you want to cure her, put her on good rich food.

Dr. L. T. Royster, Norfolk, Va.—Dr. Baker has had a vast experience in reducing infant mortality to a minimum in a great center of population, largely through the methods of inducing mothers to nurse their babies and through helping them to nurse them after they have been induced to do so. As pediatricians, we do not take the time and trouble to help mothers; we are too busy. We see it too often, that the doctor on the slightest provocation allows the mother to wean the baby, instead of helping her to keep it on the breast.

Dr. Love (closing).—Maternal dietary has con-

siderable to do with breast milk, but while it plays a certain role, I believe it is a minor matter compared with other more important considerations. There are other factors that bear more directly upon alterations in the breast milk that have to do with the mother's nervous condition.

THE PREVALENCE OF AMEBA, CERCOMONAS INTESTINALIS-HOMINIS, AND PELLAGROUS INFECTIONS IN THE SOUTH—THE RESPONSIBILITY RESTING ON NATION AND STATE; SUGGESTIONS AS TO MEANS OF CONTROL*

By John L. Jelks, M.D., F.A.C.S.,
Memphis, Tenn.

During the last fifteen years, I have had a large clinical experience in intestinal infections, especially with those cases that had run a definitely chronic course, either continuous or intermittent. I never realized my own rich opportunities until I visited the tropics and there learned that I was seeing more cases of this character than were being treated by any one clinician in the largest centers.

During all this time I have had my mind drawn to the flagellate infections and have recognized a definite pathology produced by them. As soon as I was convinced of this, I referred to the superficial pathology and the symptoms associated with these infections.

These facts are referred to now to show that flagellate infections in this country not only are not of recent occurrence, but, on the contrary, were prevalent at least fifteen years ago. The form that I discovered then was productive of definite pathology and symptoms; nor were these flagellates of one but of several varieties, the cercomonas predominating. I have traced some of these cases to their origin as best I could, and followed them with a definite purpose, namely, to see if they were not a menace to other people as a typhoid carrier would be, and as I was sure amebic cases were. The result of these investigations are not at all conclusive, though I am convinced that ameba, cercomonas and pellagra infections should be under some restrictions.

SPREAD OF PELLAGROUS INFECTION

During the several years preceding the recent very rigid winter of 1917-1918, I noted a steady increase in the cases of each of the previously named infections. The first focus of pellagrous infection has spread in all directions and the cases have so increased in number that Drs. Raines and Hudson, who treated the first recognized pellagra in the section lying six miles south of Memphis, treated over two hundred cases in 1917.

As is the case with ameba infection, pellagrous foci are very definite, and these foci when new can be directly traced to some other focus. I have had several cercomonas infections from one neighborhood in Florida, and I always suspect a focus of infection existing in any community in which I have amebic, cercomonas or pellagrous cases, and inquiries most often confirm my suspicions. But there is no central point or authority to whom to report such cases, and from whom I can secure data. I note, however, there is a bureau of animal industry, a bureau of agriculture, bureaus of this and that.

In this connection let me state that I have at present a patient on whom I recently performed an appendicoceostomy on account of dysentery of five years' duration, multiple adenomas and secondary anemia. Eight years ago this patient's grandmother died of chronic dysentery, and about one year later he moved into the grandmother's former home. For the last five years he has been an invalid. Therefore, I conclude that this patient has acquired his infection either from the same source that his grandmother acquired hers, or that her case had established a focus by soil pollution from which her grandson became infected.

I have recognized foci of amebic infection in Tennessee, Arkansas and Mississippi for the last fifteen years, and I expect to receive cases from these districts every year as long as I practice my profession in Memphis.

My friends who are favored with Government aid in the eradication of malaria are putting oil on impounded waters, screens in rooms and are cinchonizing ma-

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larial carriers, yet I can assert without fear of successful contradiction that these infections I am referring to approach in importance that of malaria from the standpoint of health and economic losses incident to them. I feel that the control of these diseases among human beings is as much the duty of the Nation as is the control of cholera among hogs and ticks among cattle.

Another patient from a west Tennessee town had to bring her mother from Texas to confirm my belief that the Texas home in which the daughter had visited was the focus from which the case emanated. Yet, at this time, the west Tennessee town referred to holds many such cases.

Some time ago, in an address to the American Proctologic Society, I mentioned the fact that during one season I traced nine cases of amebiases, two of which were fatal, to one Italian huckster who had sold the patients vegetables. Such cases are referred to me from all districts within a radius of 300 miles, except from east Tennessee and east and middle Kentucky.

DISTRICTS IN WHICH INFECTION ARE MOST PREVALENT

The districts in which each of these infections is most prevalent are western Mississippi, eastern Arkansas, southeast Missouri, and the western tier of counties of Tennessee. I consider it a very fortunate fact that these sections, though agricultural districts, are almost entirely restricted to cotton and corn raising, for which reason little exportation of contaminated vegetables results.

Berries and fruits are least likely to convey these infections, because they are least likely to come in contact with polluted soil, while lettuce, celery, cress and bulbous vegetables that are eaten raw are most positively dangerous.

After Government control of these and similar preventable diseases is established, and they are properly classified and dealt with, a new series of cases in a community will result in some one being held at least morally responsible, and perhaps some health authority will be disturbed in his somnambulism or rudely awakened from his lethargic state.

The majority of the cases diagnosed as amebiases, pellagrous and flagellate cases are carriers today, if living. Few ever recover, and few ever will recover, so long as the profession endeavors to cure amebiases with two to a dozen doses of emetin, and pellagra with a course of sodium cacodylate and a mess of beans, and cercomonas cases with a few doses of bismuth.

These are serious conditions, and the physician who treats them has responsibilities few are wont to assume, and must be aware, as I am, of the weight of his responsibilities.

I have known of physicians and surgeons who rank among our very best in Memphis performing appendicostomies in cases of chronic amebic ulceration of the entire colon, applying irrigation two or three weeks and dismissing their patients as cured. They evidently thought their patients were well. But none of these patients are well, and all of them who reside in the rural districts are menacing to other human beings, because they are carriers of communicable disease.

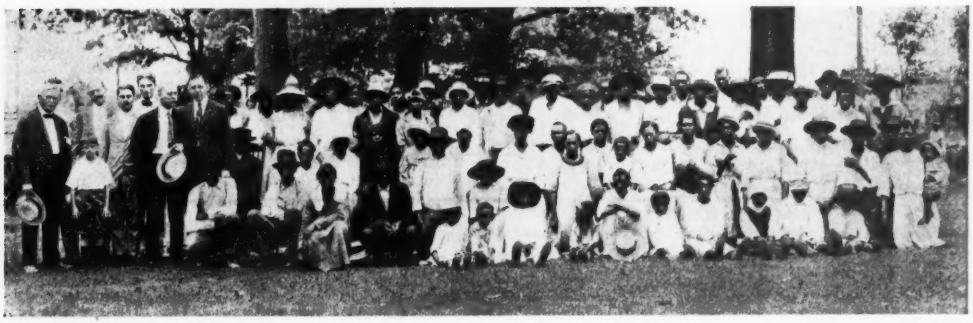
Some very dangerous teachings have been in vogue throughout the United States concerning the etiology of a disease (pellagra) which I have insisted from the day I saw my first case (March, 1910) is an infectious condition and, like typhoid fever, is conveyed from some preceding case.

Until we know the etiology of pellagra, a disease so damaging to the individual sufferer and his family and so menacing to the health and economic welfare of our entire country, a safer and saner propaganda would be to stop soil pollution, and stop back yard and garden surface contamination with human excreta.

A monetary economy may easily be shown, and as today is the day of philanthropic expenditures of vast sums of money to benefit the race, it occurs to me that a great educational campaign as to the dangers of soil pollution on account, not so much of hookworm infection alone (which was helped enormously by propaganda), but now, far more important, on account of these infections I have mentioned, which must be controlled to keep them from constituting a very serious economic problem.

Invading the entire intestinal tract, cercomonas may withstand the persistent and varied methods of attack. I have never

dreaded the amebic infection quite so much as I do a virulent cercomonas infection, for the one reason in particular: namely, I have in the performance of appendicocecostomy a means of attack which will prove successful eventually. I should dread witnessing an epidemic outbreak of cercomonas infection, for among children the mortality would be appalling. Recently a break in a sewer polluted our artesian water in Memphis, and so many cases of cercomonas infections were found that other physicians put the question to me that I had already in mind. Did they come from the water? Perhaps a thousand people were made sick the first day by drinking the water, before its pollution and cause were discovered and reported. Many others followed after the warnings were sent out to boil and filter the water. Surely they did not all get cercomonas infection, so I was persuaded that some latent infections were thus discovered.



Drs. Raines' and Hudson's pellagra clinic, six miles south of Memphis. None of these used sanitary toilets. No pellagra cases developed in the screened districts of Memphis except those traceable to exterior sources where pellagra exists.

A SUGGESTION FOR THE BUREAU OF CENSUS

Next year the United States census will be taken, and I beg here to appeal in the name of humanity versus the hog and cattle conservation as the only commercial values, that those in authority will have included a census of these diseases: tuberculosis, typhoid fever, dysentery and chronic diarrhea, pellagra and other diseases worthy of public interest of which definite information can be obtained. This would show, first, that foci of certain infections or diseases do exist; second, it would convey a fairly definite idea as to their prevalence, provided the questions are retrospective, for three to five years as they should be. And these data will be the first information needed for the educational campaign which I wish to propose, and which will be a work the members of the medical corps of the United States Army now being mustered out of service would be especially fitted to undertake.

This is an era of economic study and of perfecting construction, yet certainly, the health, educational and labor problems are our chief objects of concern. A labor both healthy and contented first, and then a labor efficient and reasonable in demands, will insure an era of unprecedented prosperity in this country.

Good roads, good waterways and good modes of transportation I grant are necessary, but just as imperative, at this time, is the expenditure of millions of dollars each year in health surveys, sanitary instructions to be carried by the United States Government to every rural hamlet and home, with statistics and authoritative instructions in modes of wholesome living.

A NEEDFUL PROPAGANDA

We feel more impressed with the necessity of carrying such educational advantages to the less fortunate classes, at this time, when the conservation of man-power and the efficiency of labor count for more than ever before in the history of man.

This propaganda means much for the moral, physical and financial welfare of the individual as well as the community. Mankind will be honest and fair with his neighbor, but how many individuals in the rural districts of our country really know that the careless disposition of human excrements constitute the most flagrant violation of the life and health of man.

Hence, it behooves us to imbue the minds of adults and children alike with the responsibility which is theirs, to protect their fellow creatures from the dangers of contamination with communicable diseases. Education here should involve the spiritual, the legal, and the physical man.

The United States Government alone can have an effectual authority in such matters: first, because these diseases are interstate; second, because a single break in the line of county or state efficiency as revealed by the work of local and state health boards would constitute the weak link in the chain of preventive science; and third, because there is generally more respect given instructions that come from the National Government.

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DISCUSSION

Dr. Seale Harris, Birmingham, Ala.—I agree fully with what Dr. Jelks says regarding the infections of the cercomonas, trichomonas, lamblia and other organisms. When we come to make routine examination of the feces of our patients, we will get some idea as to the frequency of this condition. I do not believe it is more frequent in Mobile and Birmingham than anywhere else, but for 12 years we have found this condition often because of the fact that it has been a part of my examination in every case to examine the feces for parasites, getting the warm specimen if at all possible. I am quite sure that the cercomonas, trichomonas and lamblia infections may be more serious infections than the ameba. We find a great many cases of carriers of flagellate infections who have no symptoms at all. I recall a man who had hyperchlorhydria. He was an enormous eater, was constipated, and on examining the feces there were cercomonas present in large quantities each time. If he ever had a symptom, we did not know it. We find a great many cases of diarrhea in which the only sources of infection which we could find were the cercomonas and trichomonas. The lamblia is very infrequent in this part of the country. These cases we find not only in the country, but also in the cities where they have good sewers, and the only way that we could account for it was that these people had been eating uncooked vegetables—lettuce and other vegetables that can be eaten without cooking. The most important problem we have to deal with is the question of soil pollution, not only in typhoid fever and hookworm, but in these other infections as well. I have had a number of cases in which the cercomonas infection was associated with achylia, which were very difficult to relieve.

I have had no experience with amebic dysentery in which appendicocecostomy was indicated, but I have seen such cases where there were unfortunate results.

I have not been able to find the association of the flagellettes with pellagra. I have done my best to believe in the Goldberger theory of pellagra. Certainly the question of nutrition has a great deal to do with pellagra, and in the treatment, forced feeding is a most important point. Goldberger's experiments were carried out in Germany and in Italy on a large scale. I did not make thorough investigations in these countries, but the people were on a low protein diet, particularly in Germany and in certain portions of Italy. They suffered badly for lack of food. Yet during the war there was an apparent decrease in pellagra in Italy, so far as I could secure information from the doctors at various places. At Rome a surgeon told me he had never seen a case of pellagra in Rome. He said I could find it in northern Italy and around Trieste, but it was rare in southern Italy. I went to the man who corresponds to the Surgeon General of our Army and tried to get some information about the number of cases of pellagra found in the draft. In the last draft there were thirty-four cases of men who were denied military service on account of pellagra. In northern Italy I traced it from one town to another, but could not find it. A number of men from New Orleans were there for a longer time and went through their hospitals, but they found nothing resembling pellagra. I went to one place where the people were absolutely starving, where tuberculosis and diseases of childhood were very bad where the people were suffering dreadfully for lack of food, but I found no pellagra.

I am convinced that while nutrition plays a very important part as a predisposing cause of pellagra, it is an infection of some kind; and I hope our good Southern doctors will investigate this thing and find its real etiology.

Dr. Sidney K. Simon, New Orleans, La.—I will not attempt to go into the question of pellagra at this time, but there are one or two points in Dr. Jelks' paper, and one point especially that Dr. Harris made, with which I take issue. That is, the relative importance of the flagellate infections and the entamebic infections. I think they hold a very unique position in believing that the flagellate infections are of greater importance pathogenically than the entamebic infections. A

considerable difference of opinion exists as to the pathogenicity of the flagellate infections. In most tropical countries the flagellates are normal inhabitants of the intestinal tract, just as in a great many of the lower animals, especially rabbits, mice, rats and dogs.

The statement is made that in tropical and sub-tropical countries twenty-five per cent of the population are infected with the trichomonas. Whether this organism can initiate a diarrhea is a very doubtful question in my mind. I have no doubt at all that the trichomonas and the lamblia, because of their very active movement and their whip-like flagella, undoubtedly will enter the intestinal mucosa in persons with a previous diarrheal state. They are inhabitants of the small bowel and do not appear in the large intestines unless diarrhea exists. They cannot live in their free state in a solid stool and for that reason diarrhea is essential to their presence in the discharged feces.

In that connection I wish to say that we have been calling trichomonas, cercomonas. The cercomonas is a very rare organism. The trichomonas possesses three anterior flagella, while the cercomonas is supposed to have but one. The reason why we see only one flagellum in the ordinary cercomonas is because the three anterior flagella are not visible unless brought out by proper staining methods. We really have come to some definite conclusions in that respect, and we will find that a vast majority of the so-called cercomonas are really trichomonas.

The treatment of the flagellate infections is extremely unsatisfactory, for the reason that they are inhabitants of the small intestine, and we treat only the large bowel during diarrheal conditions. It is a serious question in my mind whether in approaching a case of diarrhea which contains a large number of flagellates it is a good idea to consider the flagellates as the sole factor in the disease process, whether all our shots and ammunition should be aimed at the organism, or whether there probably exists another underlying factor which initiated the diarrheal state.

One word in regard to entameba. Dr. Jelks and I have had discussions before in regard to the treatment of entamebic dysentery, in which I have always taken issue with him, and I am sorry to see that he is still not a convert to ipecac, but dwells upon the surgical side of a purely medical disease and one which really should have no surgical application.

Dr. John A. Witherspoon, Nashville, Tenn.—One trouble with our Southern physicians is lack of thoroughness in examination in a majority of cases, and not making the reports. I have been impressed, since we have made routine examination for years of all the stools that came to my office, with the number of cases of these flagellate infections. I agree with Dr. Simon that the ameba is a more serious infection than the flagellates. But it is a very difficult thing to cure an infection from a flagellate body. And I rise to say that the infection localizes itself, too, in these flagellate bodies. I can, within one hundred miles of Nashville, pick out a half dozen towns and tell you where these foci of infection are.

It is common to have the ameba and the flagellate infections together, but I agree with Dr. Simon that under no circumstances that I have ever seen is amebic dysentery a surgical condition. I think Dr. Jelks is wrong in that. In fact, I know he is, but he will not be convinced. I use emetin hypodermically and do not believe in giving it every two or three days, but twice a day, half a grain each dose, and irrigate the colon with quinine solution.

I would like to report three cases that may be of interest. I have serious doubt whether they are capable of producing diarrhea. They are capable of keeping it going, but whether they will produce it or not I do not know. But I have seen cercomonas and trichomonas killed entirely and the diarrhea continue for weeks afterward. I regarded it as possibly left-over pathology.

Some time ago I had a case, a woman on whom I had occasion to use neoarsphenamine. She had had ameba, but they had disappeared under proper treatment. About six months before they had reappeared and had resisted all kinds of treatment. After the first injection of neoarsphenamine they disappeared entirely from the intestinal tract. I made repeated examinations every ten and every twenty days, but they have not reappeared. Since then I have treated two other cases and I am glad to say they promptly disappeared in these two cases. We all know that the arsenical preparations seem to have some rather unusual action on these intestinal parasites, but I had never thought of neoarsphenamine as treatment. Somebody else may have used it, but I have in three cases with wonderful results.

I do want to endorse Dr. Jelks' proposal in regard to getting some commission or some public officials roused on these infections. I think they have increased in the South remarkably, not only because we are getting to be better doctors and know how to make better examinations, but they have increased since our connections with South America and the Orient. Before the Spanish-American war we rarely saw a case of amebic dysentery. Now it is an almost every-day observation.

Dr. William Allan, Charlotte, N. C.—Some years ago I showed that after a dose of salts these flagellates could be found in the stools of 25 % of the inhabitants of the Carolinas. At the present day I am amazed to hear these organisms accused of pathogenicity, without the submission of any evidence to substantiate such statements. The mere association of flagellates with diarrhea means nothing, as one-fourth of our population in this latitude is infected.

Dr. J. H. Eastland, Mineral Well, Tex.—For the last twelve years we have been examining feces as a part of the routine examination, and we have found all these flagellates and protozoa. Of course, the ballantidium coli was always distinctly pathogenic. Cercomonas and trichomonas were present in a catarrhal condition and with always some nervous symptoms. As to the lamblia, I do not think anyone who ever saw such a case would doubt that they have pathogenic value. We have had some of the most pronounced cases of psychosis arriving with the presence of lamblia intestinalis. However, I believe they are easier to rid from the system than any of the parasites.

Usually it is a question of only a short treatment to get rid of them, though one has a pathology to heal, and more or less ulceration of the bowels afterward.

Dr. Harris. How do you get rid of the lamblia in a few days? How do you know it?

Dr. Eastland. By frequent examinations. The lamblia intestinalis usually will not yield to ipecac or alcresta tablets. In nearly all these conditions the intestinal contents are alkaline and I have always given dilute hydrochloric acid. It gives relief quicker than anything else.

Dr. Emmett H. Terrell, Richmond, Va.—These infections are spreading rapidly and I think with Dr. Jelks that the Government should take some steps toward at least checking their spread. I live in a section in which we find comparatively few of these parasitic infections, but we find, from year to year, more cases, particularly of amebic infection. It has been only during the last two or three years that we have been finding the flagellates at all. Last June in Atlantic City Dr. Jelks read a paper in our section along the same line, and it was suggested to him at that time that these cases of flagellate infection might be treated best through a duodenal tube, since the habitat of these organisms is the small intestine. Dr. Jelks said he would try this form of treatment, and I would like to know if he has done so, and if so, what results he has gotten.

Dr. A. L. Levin, New Orleans, La.—Drs. Jelks and Harris convey the impression, with regard to prophylaxis in amebic dysentery that vegetables and fruit from which one can isolate ameba upon culture are sources of infection. This is an old idea and must be abandoned. The experiments of Walker and Sellards have proven conclusively that such cultivated ameba have no pathogenic relation to man; that the chief factor in the spread of amebic dysentery seems to be the encysted ameba, as they obtained only cysts in the stools of natives fed motile amebæ and motile amebæ in those who were fed cysts. The present view, therefore, is that the convalescent or healthy carrier of cysts is the chief factor in the spread of amebic dysentery and when such individuals are handling or preparing food, they become a source of danger.

Dr. Jelks (closing).—The cercomonas treatment is about the same as pellagra. I must confess that I have not been doing the staining. The diet is the same, the pathology is the same. Do not tell me there is no pathology in cercomonas infection. I have cut the gut open from the top to the bottom and I know there is. It is a superficial pathology as in pellagra. There is seldom ulceration unless you have a mixed infection. In 1910 when I thought that pellagra was the result of ameba I recorded the fact that we also found cercomonas infection. I do not know whether there is anything in this or not, but I want you to look at the gut content and study these cases. You have a febrile course, you have a definite focal infection, and if you have these things you have pathology and you have other conditions that have been referred to. Amebic infection is spreading, I can see it spread all the time. The Italians throw human excreta on lettuce, and why should not the people who eat that lettuce get the infection?

Arsphenamine, like the other arsenical preparations, is a treatment for pellagra and for the cercomonas infections.

I shall give you further reports on this subject as our studies are completed. I beg of you to help me study these problems.

AUTHORS' ABSTRACTS

Medicine

On the Ingestion of Erythrocytes by Pentatrichomonas Sp. Found in a Case of Dysentery. Frank G. Haughwout and Walfrido de Leon, Manila, P. I. Philippine Journal of Science, Vol. 14, No. 2 (February, 1919), pp. 207-218.

The case is reported of a child exhibiting dysenteric symptoms who was likewise heavily infected with the flagellate protozoan *Pentatrichomonas* and the nematodes *Trichuris trichiura* and *Ascaris lumbricoides*. A few days before death the child developed broncho-pneumonia. Bacillary dysentery was not excluded.

The authors do not attempt to place the dysenteric symptoms as being the outcome of the protozoal infection. They lay stress upon the fact, however, that a large number of the flagellates contained erythrocytes apparently undergoing digestion, and they describe the process of ingestion of the corpuscles. They regard the red blood corpuscles as constituting a rather highly specialized diet and, pointing out that trichomonads usually feed on bacteria, regard the acquisition of the ability of *Pentatrichomonas* to feed on animal tissue as possibly marking a stage toward obligatory tissue parasitism. The diagnostic significance of ingested erythrocytes in *Entameba* histolytica is cited in support of the theory that certain races or strains of the trichomonad flagellates are pathogenic.

Haughwout and de Leon also report finding a trichomonad in the exudate aspirated from the pleural cavity of a Chinese and promise a detailed report of the case later.

Comparative Prognosis of Tuberculous Lesions of Right and Left Lung: Report of Five Hundred Cases. Louis Mark, Mount Vernon, Ohio. Journal of American Medical Association, Vol. 72, No. 19, May 10, 1919, p. 1348.

During the routine re-examination of patients on the Women's Service at the Ohio State Sanatorium, the author noticed that the progress of left-sided cases was slower toward quiescence than the right. In checking up the results secured in the treatment of the last 500 cases admitted to the institution, the findings were as follows: Of the 148 cases discharged as unimproved, their length of stay was less than one month, 40 % were of the right lung and 60 % were of the left. This would tend to show that in far advanced cases the percentage of left lung infections is greater than the right. The greatest percentage of tuberculous infections in both male and female occurred between the ages of 21 and 30. Of the 344 cases whose stay was 6

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TROPICAL DISEASES AND PUBLIC HEALTH

SOME PROBLEMS IN THE CONTROL OF THE ACUTE INFECTIOUS DISEASES IN THE ARMY*

By Frederick F. Russell, M.D.,
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It is probable that most of us here today have, in some manner or other, been connected with the Federal medical services during the war, and that each has learned to know his own particular field so well that he might be considered a specialist in it. The fields of activity in the medical service were many and various; yet there was one, however, in which every one had more or less experience during the war. and that field was the acute infectious diseases. In this country, at least, one might say that they were the only diseases with which we had to deal, so insignificant in number were the others.

We have learned how much, or rather how little, it is possible to do to control certain of these diseases, particularly the respiratory.

If we divide the infectious diseases into two classes—those in which the infectious agent is carried by some biting insect on the one hand, and those which are peculiar to man only, and which are spread by contact, on the other—we find that the diseases of the first class, such as malaria, plague, typhus, trench fever and the relapsing fevers, caused almost no trouble; malaria alone was fairly common and even with it the attacks were mostly relapses of old infections rather than new cases contracted after admission to the service.

On the other hand, the various kinds of pneumonia, measles, mumps, meningitis, and above all, influenza, diseases which pass directly from person to person, were prevalent at some time or other in all our camps and that they caused the greater part of our morbidity and mortality.

INTESTINAL DISEASES

The intestinal diseases were not a troublesome feature in this country, although typhoid fever in the A. E. F. in France caused more deaths than it did in the United States. To give you a concrete idea of the number of cases of the typhoid and paratyphoid fevers a few statistics and some comparisons with former wars are necessary.

During the first years of the Civil War the morbidity rate was 70.69 per 1,000 and the death rate 19.61. During the Spanish War the same rates were 91.22 and 9.67 per thousand. The apparent incidence of the disease was higher, yet the death rate was only one-half.

In 1917 the morbidity rate was 0.44 and the death rate 0.03 per 1,000.

During 1918, from the army stationed in the United States there were only 240 cases from a mean annual strength of 1,381,429. This gives an admission rate of 0.17 per 1,000 and a death rate of 0.03. Very few of these cases occurred among the vaccinated men. The rate as given above does not, without some explanation, give a true picture of the frequency of the disease, since it is based upon an average annual strength of about one and one-third million men, whereas in fact about three million men were passed through the camps in the United States in 1918, the period under consideration, and it was of course from the three million that the 240 cases were drawn.

Using the average annual strength of one and one-third millions as the basis, however, the 45 deaths which occurred give a death rate of 0.03 per thousand. This rate is the lowest on record with the exception of two years, 1913 and 1915, in which we had no deaths whatever. In France, due to the unsanitary conditions, the rates were higher, 0.47 per 1,000 for morbidity and 0.08 per 1,000 for mortality. The actual number of cases during the year among two million men was 488 cases with 88 deaths.

The amount of typhoid fever in the Army during the great war was a little, though not much greater, than we have had in the last few years in the Army, and much of it was in men who developed it

*Oration on Public Health, Southern Medical Association, Thirteenth Annual Meeting, Asheville, N. C., Nov. 10-13, 1919.

so soon after joining the service that they were without doubt in the incubation stage of the disease when sent to our camps. It is impracticable at this time to sift out the actual number of cases which were infected while in the service, and both classes will, therefore, have to be considered together.

For purposes of comparison the annual rates in the Army and civil life from 1900 are given in the following table:

TYPHOID FEVER IN THE U. S. ARMY AND IN CIVIL LIFE

Ratio per 1,000 of population.

Year	Cases	Deaths	Deaths in Civil Pop.
1900	5.75	0.43	0.36
1901	9.43	0.64	0.32
1902	8.58	0.86	0.34
1903	5.82	0.28	0.34
1904	5.62	0.27	0.32
1905	3.57	0.30	0.28
1906	5.66	0.28	0.31
1907	3.53	0.19	0.29
1908	2.94	0.23	0.24
1909	3.03	0.28	0.21
1910	2.32	0.16	0.23
1911	0.85	0.09	0.21
1912	0.31	0.04	0.16
1913	0.04	0.00	0.18
1914	0.07	0.03	0.15
1915	0.08	0.00	0.12
1916	0.23	0.03	0.13
1917	0.44	0.03	
1918	0.30	0.05	

The figures for the last year may be divided into those occurring in Europe and those in the United States:

	Europe		U. S.	
Year	Cases	Deaths	Cases	Deaths
1918	0.47	0.08	0.17	0.03

The absolute numbers for the last year are 768 cases and 133 deaths among 4,000,000 men.

TYPHOID IN THE VACCINATED

The question of typhoid fever in vaccinated persons is one of some interest which we have never, until this war, had an opportunity of studying on an adequate scale, since the number of cases in the Army has been limited to a few cases yearly, and no one in civil life has had more than a few cases at any one time for study. The history of all our cases has not yet been compiled, but we have sufficient information to indicate the probable results of further statistical study.

Victor C. Vaughan, Jr., had just completed a study of 287 complete case records before his unfortunate death in France last June. For certain points he had records of an even larger number of cases, as, for example, in the matter of bacteriological studies. He collected records of blood cultures in 274 cases out of 331 which were studied bacteriologically; in 57 others no blood cultures were made, but the diagnosis was confirmed by the isolation of typhoid bacilli from the stools or urine.

The value of the annual rates per thousand for the Army has already been referred to. Every one knows that in the Army we had approximately, including both the force in this country and that abroad, about four million men, yet many were in the service for so short a time that these annual rates are calculated upon a strength of only 2,518,499, or five-eighths of the total number of men involved. Were it not for the fact that we are dealing with a disease which occurs only once in a lifetime, that fact would not make much difference; but we know that the number of cases of any of the acute infectious diseases depend upon the number of new susceptible persons who join the Army and not on how long they remain. Therefore, the annual rates, favorable as they are to the Army practice, fail to express the true effects of our prophylactic measures.

The size of the absolute numbers which I have given above has caused some comment in the current medical journals and has caused some to doubt the efficacy of the prophylactic vaccine in the A. E. F. under the unusual war conditions and in the absence of all sanitary safeguards in the battle areas. Those of you who were there know full well the indescribable conditions of soil pollution and defilement of every building, village and farm. Of the many atrocities of the Bosche, none is more vile than the defilement of trenches, shell holes, and particularly of houses and buildings that might prove of some value to us for use as hospitals, barracks or shelters. It was impossible to live under such surroundings without becoming infected with the organisms of some or all the intestinal diseases, and you can well picture to yourselves what would have been the fate of the Army had it not been fortified against more than the average dose of infectious material. As it was, diarrheas and dysenteries, usually of short dura-

tions, were almost universal, especially after the actions on the Marne near Chateau Thierry. In the battle areas the men, for lack of other water, would drink from polluted streams and rivers and from stagnant pools by the wayside and from the little collections of water in the shell holes everywhere present.

Of the 274 cases in which blood cultures were made, 180 were positive and 94 were negative, which gives a percentage of positive cultures in 65.7 per cent. of the cases. Vaughan's table of blood cultures from proven cases of typhoid and paratyphoid is as follows:

BLOOD CULTURES FROM PROVEN CASES OF TYPHOID AND PARATYPHOID

	Total	Positive	Negative
Cases cultured once	203	143	60
Cases cultured twice	48	25	23
Cases cultured three times	10	3	7
Cases cultured four times	12	9	3
Cases cultured six times	1	0	1
Total		180	94

He also found that during the first week that 65.7 per cent. of the cases were positive and during the second week 54.7 per cent. were also positive; during the third and fourth weeks they were also frequently positive. Of 109 cases in which urine cultures were made, 33.9 per cent. were positive and 270 cases in which stool cultures were made 193, or 70.2 per cent., were positive. He also found that during the first week the likelihood of making a positive culture by the stool culture was only two-thirds as great as by blood culture, whereas during the second week the chances were about even, what little difference there was being in favor of the blood culture. During the third week the chances were slightly greater by the stool culture. The most important fact brought out is the fact that positive cultures from the blood can be obtained so late in the disease, and it is proper, therefore, to attempt blood culture when the case is first seen, even though it may be late in the disease.

These findings are not what we had been led to expect by the writings of Gay, of California, and of Dryer, of Oxford. These authors have both stated that the disease is so much modified by vaccination that positive blood cultures are few in number and that the diagnosis is often made with difficulty. Dryer in particular has stated that typhoid in the vaccinated may masquerade as almost any of the milder infectious diseases, including trench fever. Vaughan's findings are quite the contrary; typhoid fever in the vaccinated men he studied in France was marked by the same clinical signs and symptoms and offered no more difficulty at the bedside than did typhoid in the unvaccinated. The temperature curve was not materially changed from the classic type. The mortality in the cases studied was 13.7 per cent. and the average day of death was the twenty-first.

We may safely conclude, I believe, from this large collection of cases of typhoid fever in the vaccinated that the disease may be recognizable in the same way and by the same symptoms and laboratory findings, if we except agglutination, as is typhoid fever in the unvaccinated. The differences, when present, are not that the disease masquerades, but merely that it is milder; blood cultures are positive, though for a shorter period, and it may be necessary to make more cultures and to use larger quantities of blood.

Why does the disease occur, however? Why is not the protection absolute? This question is not readily answered, although the more usual explanation, granted that the patient has been really vaccinated with a potent vaccine, is that he is finally overwhelmed by large and frequent doses of infectious material, and Vaughan suggests that his immunity is gradually exhausted and the defenses of the body are finally broken down. Of course, such conditions are exceptional and could not very well occur except in the frightful war we have just passed through. It is easy to see that additional protection could have been given by repeating the vaccinations.

So far, therefore, as typhoid and the other intestinal diseases were concerned, we had relatively little difficulty; the death rate from these diseases in the United States for 1918 was the lowest on record, with the exception of two years during which we had no deaths. In the A. E. F., on the other hand, the rate was higher—0.08 compared to 0.03. Yet this death rate is, compared to the civil rate in the United States, quite low. The last year for which we have statistics is 1916, and the death rate in the registration area for that year was 13 per 100,000 of population, to be

compared to 8 under war conditions in France. If we take only the corresponding age group in the civil population into consideration we will find that it is about four times as high as the Army in France. That the death rate of an army engaged in actual warfare, from typhoid, could be so much lower than the rate in the civil population at home under peace conditions was something that we had scarcely dared to hope for.

MENINGITIS

Epidemic cerebro-spinal meningitis is another disease and has offered many problems for solution. Although the number of deaths per 100,000 of population from cerebro-spinal meningitis is not large, the case mortality of the disease is very high—about 30%—and the disease itself is most terrifying, and even among those who recover disabling sequellae are common.

The disease does not attack the same person twice and this is usually accepted as evidence that it leaves behind a protective acquired immunity to a new infection. We have, therefore, the same basis to work upon as in typhoid fever.

Natural immunity to the disease presents many interesting and unsolved problems for consideration. We know that relatively few of those exposed in any epidemic are susceptible, and sporadic cases are the rule, not the exception. The explanation of this phenomenon has never been satisfactorily given. It is occasionally possible, now that bacteriological science has progressed so far as to permit us to identify carriers, to trace the disease from patient to patient either directly or indirectly through a chain of carriers. More often we detect only the carrier and the patient. A typical instance of many similar cases is the following (Report of Colonel Simon Flexner on the War Activities of the Rockefeller Institute for Medical Research). An officer's wife suffered a typical attack of cerebro-spinal meningitis in the fifth week of her puerpium; she had seen no one but the physician and nurse until one week before the attack, when her husband returned from France. In searching for carriers it was discovered that he harbored the same type of meningococcus in his nasopharynx that was isolated from the spinal fluid of his wife. It is, therefore, reasonable to suppose that he carried the infection to her. The man himself had no symptoms of the disease at any time, though he remained a carrier until his tonsils were removed, some months afterward. Why did he become a healthy carrier and she a clinical case? is an interesting and important question. We know that in all the infectious diseases there are many mild or missed, or walking cases as well as typical infections. Was he a symptomless case and she a typical one because he had some sort of immunity or resistance that she did not possess? If so, how did he become possessed of his immunity? Was it a natural immunity, that is, congenital, or was it acquired from a mild infection at some previous time? We know that there was always some meningitis among our troops throughout the war, and he may have been repeatedly exposed. As a healthy carrier he became immune if he had not been so before, for we have long known that chronic carriers rarely if ever become ill of the disease, and during the war Lieut. F. L. Gates, M.C., in a study of meningitis at Camp Funston, found that he could demonstrate the presence of immune bodies in the blood of chronic carriers, who gave no history of ever having had the disease. We have, then, good evidence that a healthy carrier can acquire an active immunity without having ever suffered from an acute and clinically recognizable infection. The number of immunes in a community may, therefore, be related to the number who have at some time or other been healthy carriers. It is only under exceptional circumstances that we can detect immune bodies in the blood of the healthy. We know that after typhoid fever, for example, that the agglutination reaction disappears within a few months after the disease, although the patient remains immune for life. So after the carriers state in meningitis the immune bodies disappear from the serum in a short time, so far as we are able to judge by our present methods, and we have no test which will permit us to examine a given population and to separate the susceptibles from the immunes, as can be done by the Schick test in diphtheria, or by vaccinia in smallpox. This point has been recognized and efforts made to supply the deficiency and Frederick P. Gay carried out

a series of intradermal inoculations with meningococcus cultures, but without obtaining results sufficiently definite to warrant us in applying them to epidemiological surveys.

In the past, have we not been too easily satisfied by accepting the conclusion that a disease did not assume wide proportions because very few persons in any given community were susceptible to the infection. Is not the real question, why are so many immune? Is it not possibly because they have acquired an active immunity through an attack of the disease or through the carrier state? During the course of an epidemic or in the period preceding it, both British and American bacteriologists have found the carrier state surprisingly common. Often 20 % of the troops examined were found to be carriers and in some instances the rate was much higher, 40, 50, and even 60 %. It has also been noted that when the carrier rate begins to fall the case rate immediately begins to fall also. So we may picture to ourselves a sample of the population in which the greater number are insusceptible to infection, not because of their fine physical condition, or because of any natural immunity, but because of an active immunity acquired as a result of an infection so mild in character that no symptoms were noted, and the only sign of an infection would have been the presence of the meningococcus in the naso-pharynx, perhaps without any symptoms associated with a common cold.

As an example of an immune population the statistics of the Army for 1917 in regard to cerebro-spinal meningitis furnish food for thought. During the year there were 971 cases of epidemic meningitis, of which 31 % died, and in addition there were 66 cases in Europe. When we come to consider the states from which the soldiers came into the service, we find that of the total number of cases the northern tier of states contributed practically no sons who became victims of cerebrospinal infection. The great mass of the cases came from Florida, the Carolinas, Alabama, Mississippi, Louisiana and Arkansas, regions which, compared to the Northeast, are sparsely settled territory. We see that even meningitis follows to this extent much the same distribution as measles, which became epidemic in every camp occupied by soldiers from rural districts.

In an epidemic of almost any of the acute infectious diseases which are spread by contact, such as influenza, for example, we find a characteristic epidemic curve, a sharp rise to a peak and an almost equally sharp decline, tailing off slowly as it approaches normal. To this normal curve of an epidemic we should picture to ourselves an outer enclosing curve of much greater amplitude and height to indicate the missed and undiagnosed cases and the cloud of carriers. The theory of the cessation of an epidemic because of the exhaustion of susceptible material has been proposed before, only to be overthrown, because it did not fulfill the conditions. Of course so long as clinical cases only were considered it could not fulfill all the requirements, but when you take into consideration the cloud of carriers which surrounds and overshadows the cases the theory assumes quite another aspect. That this idea of a cloud of carriers is not fanciful has been shown repeatedly by bacteriological surveys of samples of the population. During the prevalence of streptococcus pneumonia in our camps in 1917, surveys of the healthy showed that they also harbored the potential disease-producing organism. If you are prepared to accept the bacillus of Pfeiffer as the cause of influenza, you will find the same distribution of the organism among the healthy contacts in that disease. Opie and his coworkers have shown by their studies at Camp Pike that among recruits just arriving at a mobilization camp the number of cases and carriers was quite small, yet they both increased week by week, until most of the new arrivals had developed clinical influenza or had become influenza bacillus carriers.

So much for the theory of the exhaustion of the susceptible material as the reason for the cessation of an epidemic. The alternative is the theory of the varying virulence of the virus, at first increasing and later diminishing. This regular variation is no doubt true. Of course the virulence of an organism can be raised in the laboratory by the rapid transfer of the organism from animal to animal, provided always that the animal is susceptible. It is reasonable to suppose that the same thing occurs in Nature, and that the

virulence of the organism is increased by its rapid transfer from patient to patient.

There will come a time, however, when there is no longer any susceptible material and then the virulence begins to fall. No doubt the virulence of the influenza virus was built up in our own camps, first in one and then in another, the most virulent strain always becoming more virulent whenever transferred to a new and susceptible population. The same thing we know was going on all over the civilized world wherever troops were being gathered into camps for training; the French had the same difficulties with their colonials. Communication was free, so far as troops were concerned, around the world with the center of the hub in France, and so we may assume that any strain of the influenza virus which possessed exceptional virulence was quickly passed along from port to port and from nation to nation, acquiring added virulence as it spread until all large masses of susceptible material was exhausted.

In 1918, it was again true that soldiers from different portions of the country showed quite different morbidity and mortality rates. In general it is true that it was the soldier from the state with a high percentage of rural population that showed the greatest susceptibility to the disease, and the soldier from the state with a high percentage of urban population and densely populated districts which showed a relatively high degree of immunity and low sick and death rates.

Attempts to produce an active, acquired immunity to meningitis have been made by Frederick L. Gates, who immunized 3,700 men at Camp Funston, Kansas, with three injections at weekly intervals, the doses being 2,000, 4,000 and 8,000 million organisms. The immediate local and general reactions were, as a rule, quite mild, although in a few instances the individual presented symptoms which simulated those of the disease. The inoculations were followed regularly by the development of a measurable quantity of agglutinins in the blood.

The subsequent history of the 3,700 inoculated men is not yet definitely known, but we think we know enough of the possibility of producing an active acquired immunity by means of vaccines to warrant us in using them in the future to protect limited groups of persons.

TREATMENT OF CARRIERS

Meningococcus Carriers.—Until quite recently it may be said that these persons were neither diagnosed nor treated, the entire effort of the health authorities being directed to isolating the patient. The carrier once recognized, however, becomes a problem, for his movements must be restricted to protect the population, and he must be held under observation until three to five negative cultures, taken at intervals of three days, have been obtained. Very early it was learned that most carriers among troops were only temporarily such, and that the meningococci tend to disappear in a week or ten days. In a relatively small number of persons, however, the carrier state is chronic, and the organisms persist, in spite of all ordinary treatment, for weeks and months. It is necessary to have them examined by a competent laryngologist and treated for whatever abnormalities that may be present. Experience has shown that some abnormality or chronic disease process is usually present which affords a nidus in which the meningococcus is entrenched. The surgical operations called for to remedy the carrier state are, as a rule, so simple that much time is saved the patient by operation. As you know, the same state of things has been found true with the carriers of the diphtheria bacillus and surgical treatment there has given equally good results.

INFLUENZA

The reports from all army stations show that epidemic influenza of a fatal type was present in the United States in the fall of 1917, and that it diminished during December and January and February, 1918, but increased noticably during the months of March and April and continued to be an important cause of illness and death throughout the summer of 1918. In the fall the great epidemic occurred and the annual death rate rapidly rose. During 1918, the disease caused 23,007 deaths in the service, giving an annual death rate of 9.14 per 1,000. If we add the deaths from other respiratory diseases to this, we obtain a total of 39,008 deaths, giving a rate of 15.75 per 1,000 for the total respiratory disease. The total number of deaths

from all causes was 47,384, so that we find that 82 % of all deaths were due to respiratory diseases. When we consider the nativity as regards states of the Union, we find that from the Northeastern and Northwestern states were relatively immune to influenza and even to the pneumonias as compared with Southern states or states characterized by a population predominately rural rather than urban. The same conditions regarding immunity and susceptibility govern in influenza that we have found true for measles.

DISCUSSION AND SUMMARY

In this brief survey of some points of the infectious disease we find that the controlling feature is the presence or absence of immunity in the soldier and in the case of measles, for example, it is easy to show that this is an active acquired immunity and not an increased non-specific resistance. It is true for all these contact diseases that the soldier from the cities and the thickly settled districts of the Northeast is immune, and that the rural soldier, regardless of the part of the country from which he comes, is susceptible. The state of Vermont, for example, is classed as rural, and her sons are susceptible to almost the same extent as those from the Southeast. It appears that neither race nor color nor physical conditions are important.

This is the most striking thing which has come out of our experience during the war, and the question immediately arises regarding some protection for our soldiers in the future. What, if anything, can be done to make the active, young and vigorous but susceptible recruit from the rural districts immune to the diseases of the cities? Sanitation alone does not seem to offer hope of success. The respiratory diseases are always with us and we accept the yearly rise and fall as due to seasonal changes in the weather, which, of course, is true, although the connection may not be a direct one. Malaria has a seasonal prevalence, but when the mosquito is controlled the summer and autumn rise does not occur. The respiratory diseases are really epidemic diseases and we overlook the fact that they behave in general as do other epidemic diseases. Let us try to picture to ourselves the conditions which prevailed before Jenner discovered vaccinia. Then cases of smallpox were always present, particularly among the children, but cases were more numerous during the winter than in the summer. Smallpox prevailed in epidemic form only when it was carried to a new susceptible population, just as pneumonia became epidemic in Panama and South Africa. Jenner's discovery banished one disease from civilized countries by making the entire population immune. In South Africa and in this country there have been reports of rather successful attempts to protect large numbers of persons against pneumonia by vaccination. Studies of this kind must be continued until we find a way to protect susceptible persons against each of the acute infectious diseases.

It is in two instances only that we now have the full knowledge of each step to take, and these instances are diphtheria and smallpox, and of these two diphtheria is the better example. On the occurrence of a case of diphtheria we have an antitoxin for treatment of the patient and for the passive immunization of the contacts; we have the Shick test to separate the susceptible contacts from the immunes and the toxin-antitoxin mixtures for the active immunization of the susceptibles. In the families and institutions where each of these procedures has been carried out, in turn, diphtheria has ceased to be a cause of morbidity, although carriers were still present, but as there are no susceptibles the chances of any cases arising from them are rendered quite remote. The treatment of the carrier has been placed on a better basis through the development of corrective surgery of the throat and nose.

To conclude, we find that urban dwellers are relatively immune to all of the acute infectious diseases, probably because of an active immunity acquired through an attack of the disease or through the carrier state.

2. That rural persons are susceptible to many of the acute infectious diseases not through any lack of resistance or of reduced resistance, but because of the absence of a specific immunity.

3. In certain diseases we are able to supply an active immunity by means of vaccination, and investigation should be carried out with the idea of increasing the number of such diseases.

4. In the absence of a vaccine the best

thing to do is to improve the physical condition of the population in the hope that it may lead to fewer typical clinical cases and more mild cases and temporary carriers.

5. To hospitalize as many cases as possible in the very earliest days of the disease to diminish the severity and the complications of the disease and so lower the mortality.

6. To develop a ward technique in the medical wards comparable to that now existing in the surgical wards which will prevent cross infections and the transfer from patient to patient of the streptococcus, pneumococcus and the organism of terminal dysentery.

7. There is no single measure which will suffice, but the public health authorities must study the total death rates and apply every measure which will tend to improve the total rate; and this in turn, by raising the sanitary level at which the community lives, will diminish the mortality, if not the incidence, of all of the infectious diseases.

THE CHAIRMAN'S ADDRESS*

By L. B. McBrayer, M.D.,
Sanatorium, N. C.

At these annual meetings, those of us who are in attendance come to realize our failures, successes and achievements and to counsel together for the future.

It would, therefore, be appropriate for this Section to take as its watchword the familiar phrase, "Watchman, what of the night?"

That our Government is stable no one at this moment questions. Neither our friends nor recent enemies on the other side, nor the Bolsheviki on both sides, would question for a moment our stability or our ability. These latter might have done so prior to last Saturday, but not today.

This being conceded, I am bold to predict that the public health has been, is, and will continue to be more and more a most important function of intelligent, humane, economical governments.

Our people arrive at a conclusion deliberately, yes, slowly; but having arrived, we act quickly, unitedly, effectively. The Teutons will agree to that statement, I am quite sure. So it is and has been in regard to public health.

Some time ago we were enabled to drive smallpox from the earth from all except those who desired to have it. This was accepted with the usual deliberation by our people, but it is not questioned today. Then we learned how to prevent puerperal fever, which at one time was so generally distributed that it bid fair to destroy our hospitals and our profession in the minds of our people, and also the mothers of our fair land. Now it is only seen by reading our older text-books.

Now comes yellow fever to the block, and Drs. Reed, Carroll, Agremonte and Lazear at one fell swoop made it possible to banish it from the earth. Be it remembered, too, that it was the orders of General Leonard Wood, a member of our profession, that made these studies, experiments and discoveries possible. These yellow fever studies occurred at the close of the Spanish-American War. Let us not forget that the officers of the line were at that time as deliberate in arriving at conclusions regarding preventive medicine as were our people, and it was the fashion in Army circles at that time for the line officer to treat the opinion of the medical officer of lower rank with contempt. On account of this, many of the strong young manhood of our country were sacrificed to the Molock of typhoid fever during that war. Along with our people, and to their credit, the line officers have had a change of heart and of mind.

Following the diseases before mentioned have come diphtheria, malaria, typhoid, and many others of lesser importance. And the National and state tuberculosis associations have adopted as their slogan, "Tuberculosis the Next to Go."

It is pretty well known by the people generally that no community need have diphtheria, malaria or typhoid unless it wants it. A practical demonstration of

*Chairman's Address, Section on Public Health, Southern Medical Association, Thirteenth Annual Meeting, Asheville, N. C., Nov. 10-13, 1919.

the above statement exists here in the City of Asheville. The records of their Health Department show no communicable disease in the city in the past six months except whooping cough and tuberculosis. Typhoid has been banished from Asheville, not by vaccination — a good enough but only temporary expedient at the present time—but by sanitation, which if kept up is permanent. I speak only the truth when I say that Asheville has saved her people more money in the last eight years in the prevention of typhoid fever than she has spent through her Health Department since it was organized, plus the amount she will spend in the next twenty years. And any city or county within the confines of the Southern Medical Association or the United States can do the same thing if it so desires. Typhoid is only mentioned as an example, as is also the City of Asheville. The City of Asheville, you will admit, is an illustrious example.

But, "Watchman, what of the night?"

In the opinion of the Chairman of this Section the people of our fair land are now rapidly reaching the conclusion, in fact many communities have already reached the conclusion, that public health is a public necessity and that personal health is a personal necessity. They have also reached the conclusion that the physicians of the Southern Medical Association are their expert advisers in these matters for the Southern states, as are the physicians of the United States their expert advisers for the whole country.

As stated in the beginning, our people having arrived at the conclusion, act quickly, unitedly and effectively. It is our opinion that we are coming upon the day, that the day is now here, when the people are ready to accept our teachings in regard to the prevention of disease and to supply the sinuses of war; and it is up to us to point the way and make good.

For which purpose public health workers throughout the South are meeting in conference today in this beautiful, sanitary City of Asheville. And amid such enchanting and inspiring environment the Section on Public Health of the Southern Medical Association will be in order.

A SANITARY SOCIAL SERVICE BASED ON EXPERIENCE WITH THE BUREAU OF VENEREAL DISEASES*

By Milton Board, M.D.,
Louisville, Ky.

I feel but poorly qualified to read a paper on this subject. The work is in its incipient stage, the crop, it is true, is abundant, but the harvest has just begun. I, myself, am but recently out of the U. S. Army, and the work in Kentucky is but beginning. Based upon an experience during the war, both in this country, where soldiers were quartered and inducted into service, and abroad, where they were to be kept "Fit to Fight,' our Government awoke to the prevalence of venereal diseases among our citizen body and the fact that their eradication was practical. Under the operation of the Chamberlain-Kahn Act, the United States Public Health Service, with the co-operation of the state boards of health and state legislative bodies, has begun an intensive campaign looking to the eradication of gonorrhea, chancroid and syphilis. Already much has been accomplished. All states in the Union are operated under the Chamberlain-Kahn Act, except Pennsylvania and the District of Columbia. On October 1, about 260 clinics were operating in the United States and this number is daily increasing. Forty-two states have established separate venereal disease bureaus.

In Kentucky we are making an organization along the following lines:

1. The treatment of these diseases;
2. The education of the public; and
3. Legislation and law enforcement.

1. Treatment of patients who, by heredity or contraction, have venereal disease, are effected chiefly by the establishment of free clinics at convenient points throughout the State. Here all who will or must can obtain treatment at the hands of competent men without charge. These clinics should be properly equipped with the necessary apparatus and provided with a suitable nurse whenever possible accurate records kept and proper

*Read in Section on Public Health, Southern Medical Association, Thirteenth Annual Meeting, Asheville, N. C., Nov. 10-13, 1919.

reports made to the State Board of Health. A standardization of treatment with such modification as the individual case requires is considered of value; and to this end, when a clinic is established, its Director is brought to Louisville, where the State Board of Health is located, and given adequate instructions in the large clinics located there.

In places where competent G. U. men are located, it is considered wise that the Director of the clinic confine himself to the treatment of the indigent. In the management of cases requiring the help of the law, this course is not only more practical, but renders the Director of clinics immune from criticism which might otherwise be directed against him. In smaller places where the Director is better qualified and equipped than his associates, a fee may be charged to those able to pay; it goes without saying that the Director in the small-town clinics must be especially tactful and conscientious.

2. There are so many ways of educating the public that it is impossible to enumerate them all. Probably the most effective way, and the most expensive, is through public lectures. A forceful speaker, aided by pictures, can accomplish a great deal in a single evening in a community, before a public keenly alive to all health matters. Another method is through the distribution of literature. This should be persistent and methodical, getting the right literature into the right hands. Nothing to my mind is so important as getting information of the right kind into the hands of the high school boys. This is the age of impressions, and in a fair percentage, impressions will last, so educate the young, especially the young boys, as to the danger of venereal disease. In this connection we must not overlook the army of young people whom the necessities of life require that they go to work as soon as the law permits. They are especially exposed to evil and ignorant influence, and must be reached by factory inspection and factory education. In the campaign of education we need the aid of the newspapers, and they owe society a great deal of aid to recompense for the evil they have done in former years in carrying advertisements of quack nostrums and charlatans, a policy I am glad to say most of them have tbandoned. We need the aid of ministers, teachers, colleges and universities, of women's clubs and of social workers, for education means prevention, and in no field is preventive medicine of greater value than in the handling of the venereal problem.

3. The success or failure of the great movement of legislation and law enforcement is dependent upon constructive legislation and its enforcement. The basic principles of law enforcement can be expressed in two paragraphs:

(a) We deny that sexual disease is a private affair. Being infectious and communicable, it is a matter of public concern to be handled by public health officials.

(b) We deny the right of any individual with venereal disease to infect another person. Let us consider briefly the first proposition. Venereal disease, being infectious and communicable, is a matter of public concern, and therefore reportable. This is a basic duty of every physician and the report should be, to my mind, by name, and should be in duplicate to the local health officer and to the chief health officer of the state. If you are going to destroy an enemy of any kind, you must first locate the enemy; and having entered upon the duty of destroying the germs of venereal disease, we must have the active and hearty support of the practitioner of medicine. Here again we must have an intelligent follow-up campaign, not a well-intentioned but impracticable campaign of moralists, but practical men and women who will follow venereal disease to its lair and see that proper treatment is administered until the individual is immune. Even then the duty does not cease. The unfortunate street walker or prostitute may be a moron or constitutional psycopath; many of them are. They may be hungry or have hungry, helpless children; many of them have, and if these conditions are found to obtain, the necessary steps must be taken to alleviate the condition, — commitment to homes, finding employment, returning to former rural environment, commitment to asylums, or whatever is indicated in each individual case.

(c) We deny the right of any individual with venereal disease to infect another person. This automatically denies the right of existence of red-light districts, bawdy

houses, either public or for private assignation, hotel prostitutes or street walkers. This position is uncompromising. Free treatment is offered to the indigent, the right of quarantine, at whatever place necessary to protect the public, is invoked. The male prostitute is punished with the female, as was recently done in Oklahoma, where a man was given five years in the penitentiary for infecting a female with syphilis. The house of prostitution or assignation is closed, so is the taxicab line, if improperly used. Laws with teeth are needed, and officials who will enforce them. The unscrupulous druggist, who prescribes his three-day cures and "blood remedies" over the counter, and the newspaper who advertises these, must be prosecuted, the worthless advertising sex specialists must be driven from all states, as they have long ago been driven from Kentucky.

With more syphilis now in this country than tuberculosis; with blind asylums filled with children as a result of gonorrhea; with women unsexed and their nervous systems shattered as the result of gonorrhea, usually contracted from their husbands; with paresis, which a hundred years ago was a medical curiosity but which is now filling our insane hospitals with locomotor and cerebro-spinal syphilis, constituting a great part of the work of the modern neurologist, is it not time that the doctor, the lawyer, the minister, the teacher, the Women's Federation and the legislative bodies awake to the appalling facts of this situation and begin in a rational, thorough manner the eradication of venereal disease?

AUTHORS' ABSTRACTS

Medicine

(Continued from page 28)

months or longer, there were 191 male, of which 12 % were classed on admission as incipient, 67.6 % as moderately advanced, and 20.4 % as advanced. Of 153 females 26 % were incipient, 54.9 % moderately advanced, and 19.1 % advanced. There were 172 cases of the right and the same number of the left in both the male and female. In the incipient the greater number were of the right lung, and of the far advanced the greater number were of the left. Of the patients discharged as arrested, 16.6 % were right-sided, whereas only 8.8 % were left-sided. The proportion of right to left in the male was as 4:3 and in the female 4:1. Of cases discharged as apparently arrested, the proportion of right to left in the male was about 3:1, whereas in the female it was 2:1. In those that became quiescent the proportion of the male was 3 left to 2 right, and in the female 2 left to 1 right. The average length of stay at the institution was: incipient, 8.7 months; moderately advanced, 9.9 months; and the advanced, 9.1 months. Average gain in weight was: right, 12.8, and left, 14.8 pounds. All cases were examined every two months. Seventy-five per cent. of the artificial pneumothorax cases were of the left lung. The reasons for the more rapid spread of the infection in the left lung are: the left lung is the smaller and has but two lobes; the bronchus leading to the left lung forms a more obtuse angle than the right, and is much smaller; there are two fissures on the right and only one on the left; the interlobar clefts fence in the infection and prevent spreading except through the regular channels along the bronchial tree.

The involvement being equal, the prognosis of the left lung cases is not so good as of the right. Prognosis of male cases is better than of the female. There is less tendency to fibrosis in the left lung than in the right. Patients with left lung lesions require longer bed care than right lung cases of the same amount of involvement. Rapid gain in weight does not always mean rapid progress toward quiescence. Greater number of incipient cases show the right lung mostly involved and the greater number of advanced cases show the left lung mostly involved.

SURGERY

RAILWAY, INDUSTRIAL, GYNECOLOGICAL, OBSTETRICAL AND UROLOGICAL

LESSONS FROM THE WAR*

By J. M. T. Finney, M.D., F.A.C.S.,
Baltimore, Md.

Today marks the first anniversary of the signing of the armistice which brought to a close the greatest war in history, a war in which the opposing forces represented, respectively, democracy and autocracy, freedom and militarism, civilization and barbarism. It is fitting, therefore, upon this occasion that we should pause for a moment to consider some of the lessons that are to be learned from that conflict. After the lapse of a year, one's vision should be a little clearer and one's perspective should be a little better. One ought now to be able to appraise at more nearly their true value the experiences that were gained during those trying times and to interpret correctly the lessons to be learned from a review of some of the accomplishments as well as the failures of the war. This review might very profitably take a wider scope and include other departments and interests than those that have to do strictly with the medical profession, but the length of time allotted to us will prevent more than a casual reference to any but those that more nearly concern us.

The spirit of self-sacrifice, of devotion to duty, of resourcefulness and adaptability, of undaunted courage, of never-failing cheerfulness under most trying conditions exhibited by the American soldier-doctor, indeed by the entire American Army, was beyond all praise. The war has demonstrated for all time that the average American, whether doctor or layman, when occasion requires, is capable of rising to the sublimest heights of patriotism as translated into service and sacrifice. This is by far the most important lesson of the war, since it means so much for the future of the Nation. It is worth all it cost to be assured that the average American can be depended upon to do his duty—military, civic or political. Of the last, we have had renewed evidences in some of the results of the recent elections, notably in Massachusetts.

One of the most striking and satisfactory features of the entire campaign was the wonderful adaptability to circumstances and resourcefulness shown by the average American doctor under conditions with which he was in no wise familiar. This fact made it possible to accomplish the seemingly impossible. It so often happened that when those in authority were sorely put to it to find somebody with sufficient training and experience to put into responsible positions and when, owing to the scarcity of personnel, failing to find such, were compelled to put in such positions of responsibility untried and comparatively untrained and inexperienced men, they were so frequently agreeably surprised to find unusual executive ability and surgical skill and judgment where hitherto they had not been known to exist. In other words, to meet some sudden emergency, it was rare not to find just at hand and waiting for the opportunity to show what he could do, some man with qualities of leadership and executive ability of a high order. This was a source of no little satisfaction as well as wonder even to those of us who had always had the highest respect and admiration for both the ability and adaptability of the average American doctor. He certainly has shone in a splendid light in the late war, and the record of his achievements, when the history of that war is recorded, will add luster to its pages.

One lesson that can not fail to impress every intelligent person who had anything to do with military or public affairs at that time was the lamentable lack of preparedness along all lines in which the country found itself upon entering into the war. Whatever the explanation of this condition or the reasons therefor, the outstanding lesson is that we should never again allow ourselves to be placed in a similar position. As to the measures that

*Oration on Surgery, Southern Medical Association, Thirteenth Annual Meeting, Asheville, N. C., Nov. 10-13, 1919.

should be taken to prevent this, wide differences of opinion will naturally develop, but as a responsible body of medical men, we ought to place ourselves on record in some way as in favor of whatever measures may be agreed upon by those in a position to know, as best calculated to avoid a repetition, at least so far as the Medical Department is concerned, of the deplorable conditions that existed when this country entered the war. To this end, it is the plain duty of the members of the Medical Corps of the Army to secure the advice and assistance of the members of the medical profession who so willingly volunteered and responded to the call of their country and gave their services — some of them their lives—to the cause. It is a most encouraging fact that those in authority in the Army appear to be most anxious to avail themselves of the advice and assistance of the members of the old Medical Reserve Corps, and I am informed that steps have already been taken to secure their active interest and co-operation.

On the other hand, in order that the fullest measure of success may be attained, the former members of the Reserve Corps should in their turn be willing to co-operate with the Regular Medical Corps in every way, to the end that an efficient organization may be perfected that will embody the best thought and judgment of the profession along these lines and, as far as possible, insure us against a repetition in the future of the unpleasant experiences of the early days of the war.

Another important lesson was the value of the base hospitals as originally suggested and developed by Colonel Jefferson R. Kean, of the Regular Army Medical Corps. These base hospital units were the means of gathering together and bringing to France a remarkable group of medical men comprising many of the best that the country afforded. They formed the nucleus for the clinical staff of the Army, whose duty it was to have direct care and supervision of the sick and wounded, as the time and attention of the regular medical officers were engaged wholly in executive positions. The Red Cross base hospitals which had been previously organized were drawn upon early and a half dozen or so of them were ordered to France, some to serve with the English and others with their own troops. Many of these men were already teachers in medical schools. They were distributed around among the French and English, who very kindly made it possible for them to learn intensively military surgery at first hand. These men in turn became instructors for our own medical men as they arrived in France. It, therefore, became possible to form a rapidly expanding organization capable of taking care of the needs of the Army. The Red Cross base hospital idea in some form or other should be perpetuated, as its worth was abundantly proven on the battle fields and in the training areas of France. The efforts of the military authorities to perpetuate the idea should receive the hearty support and co-operation of the profession.

Another lesson, though seemingly, perhaps, of comparatively minor importance, that impressed itself on the minds of those engaged in war surgery, especially in the mobile and evacuation hospitals, was the necessity for the simplification of methods of surgical technique. Take the single item of sterile linen, sheets and towels used in the operating rooms. Owing to the difficulties met with in obtaining satisfactory laundry facilities, it was absolutely necessary to reduce the number of sheets and towels used in the operating rooms. It was found that with care most excellent results could be obtained with a minimum amount of sterile toweling and sheeting. In these days when hospital management is confronted with grave difficulties in the way of securing proper help and with the high cost of living, it has been found necessary to retrench and to reduce expenses in every way possible. This, of course, should not be done at the expense of the patient or of surgical efficiency, but the habits of frugality acquired in France, and care in the use of surgical materials of all kinds in the operating room, will surely bear fruit in a simplified technic and surgical procedure, and in a corresponding decrease in the running expenses of our civil hospitals. All this may be done without lowering their efficiency.

One of the great developments made necessary by war conditions was the grouping of medical men into teams of all kinds. There were surgical teams, formed of well trained surgeons, for the most part younger men, for operative work in the mobile and evacuation hospitals; splint teams of trained orthopedists to re-

applying splints and other fixation apparatus in fracture cases; shock teams composed chiefly of medical men in order to conserve the time of the surgeons in periods of stress. There were x-ray teams to reinforce the regular x-ray staff of the hospitals during the same periods, and so on throughout the various departments of army medical activity. Could not this principle be introduced into civil practice? Judging from the experiences in the war and from the signs of the times, are we not justified in raising the question as to whether or not team work in surgery is to be one of the developments of the future? In certain well known clinics, the idea has already been put into practice and seems to be yielding satisfactory results, both from the standpoint of the patient as well as the surgeon. It is obvious in these days of the highly developed specialties that no one brain can compass them all any more than in these days of the high cost of living can any but the very wealthy patient afford the necessary examinations by the specialists needed to obtain an exhaustive study of his case. What, then, is to be done? The answer would seem to be to organize the medical and surgical specialties into groups working together, then give the patient the benefit of individual examination and the combined judgment of the group, and for a single fee. This gives all concerned a fair deal and makes for the safeguarding of the patient's interests as well as for professional efficiency.

Great as have been the numbers of those incapacitated by the war, they are small as compared to the steady stream of the injured constantly pouring forth from the myriad of industrial establishments throughout the world. Sporadic, but ineffectual attempts have been made from time to time to salvage this large group. Methods to make these civilians beneficiaries of some system corresponding to that developed along military lines are sure to be evolved, indeed are already under way. The good that will be accomplished in this direction is incalculable. Take the single item of casualties to passengers and employees in connection with the operation of the interstate railroads of the United States for one year, 1917. According to figures furnished me, the total killed were 10,087; injured, 194,805. Compare these figures with our entire casualties of the world war. The war is ended, but the industries will continue uninterruptedly. Add their total casualties to those of the railroads, and the result is truly appalling.

Could not the lesson learned in the war as to the efficient and rapid care of the wounded be applied in civil practice and first aid stations and emergency hospitals be established wherever needed, and properly manned, while the real surgery is left to be performed at the base hospitals, so to speak, by well trained surgeons? This would take the place of the system now in effect where so much of the surgery is done in small hospitals in small cities and towns with poorly trained surgeons, with the natural result of a large percentage of unsatisfactory results.

Turning next to a consideration of the venereal disease situation, it will be recalled that in most wars of the past they have played a large part in the loss of man-power and efficiency. This war bid fair to become no exception to the rule, indeed the conditions under which it was being waged were peculiarly adapted to the encouragement of practices calculated to increase rather than decrease its incidence. It is worthy of remark in passing that this particular war problem was dealt with in characteristically American fashion and in line with ideals and established theories held and practiced in the United States and, at first, in the face of determined opposition upon the part of the French and, to a less extent, the English, who held entirely different ideas as to the management. The basis of the American plan was educational: discouragement of the use of all forms of intoxicants; repression of all forms of prostitution; the infliction of adequate punishment upon those contracting venereal disease; the compulsory use of prophylaxis; the calling into play of all available physical, social, moral and religious agencies that might in any way aid in keeping men straight. To this end, and in order not to place a premium upon the contraction of venereal disease by sending soldiers so infected into hospitals in the rear, they were concentrated into working camps in the front areas where they were kept at hard labor, under strict military discipline, during treatment and convalescence. The end results of this method of handling an extremely difficult and complex situation have been most satisfactory.

There is food for thought just here as

to the best methods of bringing about a more widespread use of prophylaxis. There are those who believe that by proper municipal and state enforcement of prophylactic measures a reduction in the venereal rate in the civil population analogous to that in the Army is not beyond the range of possibility. And when one recalls the percentage of venereal infection present in the recent draft board examination, one is appalled by the potential danger to society. Is the medical profession doing its full duty in this most important matter? The time is now ripe for real progress in the management and control of this scourge of the human race. Let us not abate a particle our efforts along moral and educational lines; rather let us redouble our efforts, but let us at the same time call to our aid all the resources of scientific medicine in order to wage successful warfare against this arch enemy of mankind.

Attention should be directed particularly to the work of the surgical specialties which for want of time we must group together, although well meriting individual mention both from the character and volume of work done during and after the war. I refer to the invaluable aid rendered by the x-ray experts through the photographic plate and the fluoroscopic screen, both in diagnosis and operative control. What this assistance meant to the surgeon in the way of proper direction of his efforts and to the wounded soldier in the saving of life and limb is beyond computation. So, too, the experience gained by the maxillo-facial, the eye and ear, the neurological, orthopedic and genito-urinary specialists is much of it applicable to civil practice and will enrich our knowledge and continually widen our sphere of usefulness to our patients and to society at large.

In the surgery of the late war, certain novel technical operative procedures were gradually developed and are coming into general use. While none of these, strictly speaking, has introduced a new principle, still several of them have involved radical departures from hitherto accepted surgical practice. Debridement of wounds or the rendering them practically sterile, or through excision of devitalized tissues, with the removal of foreign bodies, and followed by the immediate closure of wounds so treated, or, owing to the exigencies of the case, their temporarily delayed suture, is to be mentioned among the most important of this class, by reason of the fact that it exercises so profound and far-reaching an influence upon the rapid healing of the wounds, the prevention of infection and the long train of untoward circumstances so liable to result therefrom. Mention may also be made of the appropriate immediate management of amputations, chest wounds, maxillo-facial injuries and of injuries to bones and joints, and the systematic application of antiseptic measures to the cleansing and sterilizing of war wounds, including the use of the Carrel-Dakin technic. All these methods have contributed largely to the diminution of the necessity for later reconstructive work, and all of them are equally adaptable to civil and industrial surgery.

Perhaps the outstanding practical lessons of the war were those of sanitation, reconstruction or re-education of the wounded. An awakening of the public conscience and a stimulation of general interest along sanitary lines, especially along the line of prevention of disease, is most noticeable. We are now upon the threshold of great advances and greater achievements. The medical profession will do well to devote much time and thought to the increase in knowledge and to perfection of methods in this direction. Schools are springing up all over the country devoted especially to the study of hygiene and sanitary science, notably the one in Baltimore under the Rockefeller Foundation. The next few years will witness many changes and much progress in this direction. Incidentally here is a new field of activity for women as well as men, one in which they are likely to excel. The day is probably not far distant when women as sanitary inspectors, and in kindred positions, will be a familiar sight.

The strides made in the direction of securing a maximum functional result in addition to good wound healing in all war injuries have been truly remarkable. The same is true with regard to re-education and reconstruction of the wounded. The goal has been to make every injured man a self-supporting, self-respecting member of society and not an object of charity.

The world war through which we have just passed has forever settled among other things of more or less importance the status of the disabled soldier or sailor. Public opinion throughout the civilized

world is united in the determination to give to the war wounded a chance to become self-supporting, self-respecting citizens despite of the handicap placed upon them by reason of injury sustained in battle. To this end, agencies have been established to re-educate and rehabilitate all those affected in order to make them useful and producing members of society. It is safe to say that few developments of the war will be more far-reaching in their effort upon the whole domain of sociology than the changes in respect of treatment accorded this class of unfortunates, for already to an ever-increasing extent the principles established in the treatment of war cripples are being introduced into civil life, and it will not be long before it will have reached huge proportions.

The attitude of the public in general and of the medical profession in particular toward the crippled and deformed at different periods of the world's history makes an interesting study, one that owing to the enormous increase in disability and deformity made inevitable by a great war, becomes doubly interesting. At the beginning of history, primitive society regarded the cripple as an outcast, doomed to wander in the wilderness, to die of exposure and want, or to be sacrificed to expatiate the wrath of the gods. The dawn of civilization brought about only a slight amelioration of his lot. "Oriental peoples still continued to treat their cripples in anything but humane fashion." The inhabitants of India cast them into the Ganges; the Spartans hurled them from a precipice; the Hebrews banished them so that they had perforce to beg by the roadside."

A new note, however, was struck in the attitude of society toward the deformed and crippled by the advent of Christianity. Christ and His apostles in the course of their ministry are recorded to have made many cures among the blind, the lame and the halt and to have treated them with all kindness. While this represented a distinct step forward, the new influence was not profound, as in spite of more or less spasmodic effort continued through centuries, almost the sole response to the pleas for succor of the disabled throughout the Middle Ages was alms given in response to begging. During all this time, however, the church had maintained some form of relief work, though always of the most primitive character. A curious development during this period was the exploitation of physical deformity for comic and other less pleasing purposes. The court fool or jester is a familiar instance. Throughout all this early period of human history the lot of the disabled continued to be a hard one.

The first really rational approach to the problem of the poor in general and of the disabled and deformed in particular, dates from the publication of a book in the sixteenth century by one Vives, a Spaniard, a book that was translated into several languages and was widely read. From this time on, by slow and halting stages of evolution and varying in different countries, according to local conditions, the disabled man finally found himself the recipient of an annuity or pension, insufficient properly to support him, and which had frequently to be supplemented by begging or else he became the inmate of some sort of a charitable institution. Thus were developed the two principles made use of up to the present time in dealing with this class of unfortunates, namely, pensions and institutionalism. These two principles in one form or another were ultimately adopted by all of the civilized nations. Our own Nation, very early in her history, undertook measures of this sort and has provided most liberally, indeed prodigally, for her war wounded in the form of pensions and state and Federal soldiers' homes. "Thus up to very recently the cripple has always been an object of charity, if not of actual neglect and mistreatment. Public opinion has conceived him as helpless and, as a result, has generally insisted that he become so. Charity has been readily proffered, but almost never the opportunity to make good and to get back on his feet." According to the almost unanimous testimony of those affected, the greatest handicap heretofore to the disabled is not the loss of limb or other disability, but the weight of public opinion. For a long time every indication has pointed to the need of special training facilities for the disabled. But the community at large did not see fit to provide them. Obviously, then, though important principles had been formulated and sporadically applied, the problem of dealing with the disabled and deformed soldier had, until the present war, remained unsolved.

The record, then, of the great war just

over undoubtedly marks a new era in the provision made for the welfare of the disabled soldier. It may be said to have been actually begun in 1914 by the establishment in Lyons, France, by the Mayor of that City, of the first training school for invalid soldiers, although previous to this time, sporadic attempts of a similar nature had been made in Belgium, Great Britain and France. This new idea took hold instantly and spread rapidly throughout all of the belligerent countries and was generally accepted, developed and put into more or less active operation by them all, until now, instead of being completely neglected or an object of charity, the disabled soldier is offered the opportunity, through training and re-education, of again becoming an independent citizen and a self-supporting member of society. Thus was taken a great step forward along sociologic lines.

During the four years of war, and since the signing of the armistice, a very considerable literature has accumulated upon this subject, the salient points of which may be briefly epitomized as follows: (1) the vast majority of war disabled can be self-supporting citizens, contributors to society and not a drain upon it; (2) many soldiers handicapped by their injuries can, nevertheless, by education and training, continue to follow with success their former vocations; (3) others, through re-education, may be fitted to fill positions of greater usefulness and requiring the exercise of more knowledge and skill with larger pecuniary returns than formerly. Reconstruction embraces not only the purely surgical procedures of a primary or secondary nature necessitated by the wound itself and determined by its character, but also all other accessory measures that have to do more especially with the restoration of function. The ultimate goal of all surgery, in addition to the saving of life and relief of suffering and deformity, is the restoration of function. This last is a contribution of orthopedics to surgery and has been greatly stimulated and advanced by opportunities and developments, the outcome of the late war. "The means that have been employed in securing this end are occupational, educational and vocational therapy. The specific purpose is to help each patient to function again as a whole man, physically, socially, educationally and economically. Physically, by helping to restore his body, so far as possible, to its normal condition; socially, by enabling him to feel that despite his physical handicap, he still may be a self-reliant and self-respecting member of the community; educationally, by furnishing him with such a training that he may make the most of his mental and physical resources and increase his personal efficiency; economically, by providing him with the means of earning a comfortable livelihood, so that on his return to civilian life he may be an economic asset instead of a liability."

Consider for a moment the great possibilities that lie as yet untouched and undeveloped in the direction of the application of the benefits that have accrued to the wounded soldier from reconstructional and re-educational methods to the casualties continually taking place in appalling numbers in the great industrial armies throughout the world. Measure, if you can in your imagination, the saving to the various industries of man-power that will be brought about thereby and its effect in turn upon the economic situation in the country, a matter of vital importance in these days when lessened production is playing such an important role in the general social and economic unrest. Steps have already been taken in various states to organize industries along these lines and to impress upon capital the advantages to themselves as well as to labor and to society in general of instituting at the earliest possible moment proper measures not only for the prevention of accident, but for the functional reconstruction and re-education of the injured.

With certain modifications rendered necessary by the changed conditions, the basic principles of the military methods of handling the wounded could undoubtedly be introduced with benefit into civil practice in dealing with industrial accidents. A great opportunity confronts the medical profession to inaugurate and carry to completion certain needed improvements and reforms.

A brief resumé of some of the advances made in the war along preventive as well as reconstructive lines will conclude our discussion of the subject. Be it observed, however, that here as elsewhere in surgery, prevention is far better than cure.

Incidentally in passing, attention is directed to the fact that in the war just passed specialization in the various branches of medical and surgical work was first introduced and seriously developed. The idea is an excellent one and its usefulness has been proved in many ways. It has come to stay. So, too, with the laboratory of surgical research for the exclusive use of the surgical staff in the working out of problems that are constantly presenting themselves in the course of routine war surgery. Our experience in the A. E. F. has demonstrated not only the usefulness but the absolute necessity for such provision. Here the surgeon can bring his problems to the laboratory man and together they can discuss them and work out a solution.

Turning now to the management of joint wounds, two real advances are to be recorded, namely, (1) the prevention of infection of the wounded joints by excision of contaminated tissues and immediate suture, and (2) the treatment of purulent arthritis by incision followed by systematic active movement of the joint. Heretofore, war wounds of the larger joints have nearly always meant infection with supuration more or less intense, followed by amputation, general septicemia and death, or, in the more favorable cases, by anchylosis. The method of excising contaminated soft parts in fresh joint wounds, followed by immediate suture, early introduced by the French into surgical practice in this war, has gone far toward preventing the disastrous consequences of joint infection just referred to. The revolutionary ideas with regard to the treatment of purulent arthritis introduced by Willems bids fair to supplant the orthodox fixation methods so long in use. He freely incises these suppurating joints and makes the patients keep up active movements of them during the healing process. This method, applied in selected cases, and when properly supervised, is attended with surprisingly little pain, secures perfect drainage, avoids the risk of general sepsis and of attendant muscular atrophy, and furnishes a reasonable assurance of preserving joint function unimpaired. The progress made in the treatment, both early and late, of joint injuries constitutes one of the most striking features of the surgery of the war.

The treatment of fractures resulting from battle casualties resolves itself largely into the treatment of soft part wounds, plus the added difficulties which the injuries to bony tissue involve. In suitable cases—that is, where destruction and loss of substance has not been too great—compound fractures may be converted into simple ones, after careful and thorough debridement and immediate closure of the wound. Appropriate mechanical treatment may then be instituted for simple fracture. The number of cases of bone infection and resulting osteomyelitis is in this way very markedly reduced. The transportation of fracture cases hitherto so difficult was much simplified by the use of the long Thomas traction hip splint and the snow-shoe stretcher. The introduction of this splint, or Keller's modification of it, into general use in both civil and military practice, is one of the outstanding advances of the war.

Attention is especially directed to the strides that have been made in the cure of that distressing group of chronics, namely, the osteo-myelitides, hitherto so difficult to cure. The Carrel-Dakin method offers to them the opportunity to secure a fairly prompt and permanent cure by insuring, when properly used, thorough disinfection of the infected bone, thus permitting the carrying out of the necessary surgical procedures under conditions favorable to complete success. It has been abundantly demonstrated that these cases can be cured and in a reasonable time. The old methods of simply curetting sinuses and removing sequestra and leaving infected bone tissue behind are ineffectual and, in the light of our present knowledge, unjustifiable.

Despite the existence of sharp differences of opinion even now in the minds of some observers as to the relative merits or demerits of the Carrel-Dakin solution for use in civil as well as war surgery, the speaker does not hesitate to state as his individual opinion, based upon experience gained in the military hospitals in France and in civil hospitals in this country, that it is one of the most important and far-reaching contributions of the war to the armamentarium of the surgeon. In order, however, to secure the full benefit of the treatment, it is essential to fol-

low to the minutest detail the technic laid down by its author, both as regards the preparation of the solution and the surgical treatment of the wound, such as thorough drainage of pus pockets, removal of foreign bodies and sequestra, the flattening out of deep bone cavities as well as the mechanical features connected with the proper placing of the tubes, insertion of gauze drainage to keep the wound edges apart, and their proper protection. In fact, the success or failure of the treatment depends upon the conscientious and intelligent carrying out of the minutest details of the method as originally described, and is directly proportioned to the thoroughness with which it is done. Only the combination of a well-trained surgeon and laboratory man, as pointed out by Carrel, Depage, Chutro and others, can secure the maximum of good results.

One of the signal advances of the war has been the better management of amputation cases. Formerly, little attention was paid to this class of unfortunates. Surgeons interested themselves but little in any but the purely operative problems, leaving the subsequent care of the stump, once the wound had healed, to the direction of the artificial limb manufacturers, who were usually entirely devoid of surgical knowledge and experience. It has, however, of late come to be recognized that this group of cases requires special care and attention, directed both to the securing of a satisfactory stump and to the early use of a suitable and properly fitting prosthetic apparatus in order that the best results may be obtained.

Early application of temporary artificial legs or pegs to leg stumps which are healed, or in which the wound is small, has proved of the greatest value by helping to restore muscular power, preventing any tendency to contracture or joint stiffness, hardening the stump end and so aiding in early weight-bearing, thus shortening materially the time before the final prosthesis can be applied, and exerting thereby a noticeably beneficial effect upon the patient's morale.

As a result of the free use of the instruments of destruction which is insaparably connected with modern warfare, so also under conditions of modern industrial activity, there must inevitably result a varying but considerable number of casualties. Of these, a small percentage will result fatally. A much larger percentage will completely recover from all ill effects of their wounds, while the remainder will sustain for the balance of their lives permanent disability of varying degrees. If this latter class of cripples is carefully analyzed, however, it will be observed that a certain proportion of cases (varying with the particular circumstances under which the injuries were received and the treatment administered) will be shown to belong to that unfortnate class known as "preventable deformities." There must always remain as the unavoidable sequence of injuries from whatever cause an irreducible minimum of deformities due to the nature of the injuries sustained, destruction of tissues, loss of substance, etc. This class, while it may be gradually reduced by advances in our knowledge and improved treatment, can never be altogether eliminated. But the other class, the "preventable deformities," should engage our undivided attention with a view to the development and application of preventive methods in the direction of providing by reconstruction and re-education a remedy for evils that never should have been allowed to occur. A study of war conditions and methods and a comparison of them with those of peace, with a view to finding out how best to bring about the appropriation and application of the lessons learned in the former to the needs of the latter, will go a long way toward accomplishing the desired results. This is one of the great lessons of the war as yet imperfectly learned.

THE MEDICAL PROFESSION IN THE WAR; ITS SACRIFICES AND COMPENSATIONS: HUMANITY'S GAINS*

By Jere L. Crook, A.M., M.D., F.A.C.S., Jackson, Tenn.

The declaration of war with Germany on April 6, 1917, found no class of our citizenship prepared to render so great a service as the medical profession. It was not necessary to train physicians to act as physicians because they were already ex-

*Chairman's Address, Section on Surgery, Southern Medical Association, Thirteenth Annual Meeting, Asheville, N. C., Nov. 19-13, 1919.

perienced in that line, and were practicing their art daily in the communities in which they lived. They had to be given lessons in military tactics and receive the benefit of open air camp life in order to make them fit into the military machine and to prepare them physically for the ordeals to which they would be subjected.

The Government never made its appeal in vain when it was addressed to our profession. Our brainiest, busiest, and best men closed their offices, resigned their positions in the leading hospitals of the country, bade adieu to their patients in cities, towns and countrysides all over this broad land and placed themselves absolutely and unreservedly in the hands of the Government. Never was there a more patriotic response to an urgent need.

They met in common with the volunteer soldier the difficulties of camp life and yet they rendered service not only as soldiers but as highly skilled men wholly devoted and consecrated to the needs of the Army. Of these physicians General Pershing said: "Many of them have shared with line troops the hardships of campaign conditions and have sustained casualties and privations with fortitude that is beyond praise. No labor has been too exhausting and no danger too great to prevent their full discharge of duty."

Those of us who for various reasons were not privileged to serve in uniform feel that our soldier brethren are due the highest meed of praise for their splendid service, and we wish them to know that we fully appreciate the magnitude of their sacrifices and contribution to the winning of the war. It is a great joy to us to have them back once more, and their record of achievements will be for all time a wonderful heritage to their children and an honor to the profession to which they belong.

The men who stayed at home in many instances were privileged to render most necessary service to the Government. The members of the various draft boards which served under the draft act did a work that was absolutely essential and one that has proven to be most efficient and successful. According to Dr. Paul DeWitt, of Nashville, Captain in the Selective Service: "The selective service system proved its worth. It fully demonstrated itself to be the surest, quickest and most economical way to raise an army, the only way to prevent disruption of business, secure equal selection from all classes and localities, and to utilize every man and industry for the greatest benefit to the Nation.

"Twenty-four million men were registered and classified and 3,208,446 were physically examined. This vast amount of data has been so tabulated that the Government now has exact information concerning every man of military age and every industry which makes for war and the public weal. The great machine had just been perfected when the end came; the reins were just gathered together and the whole Nation ready to be driven as one mighty team to crush the enemy. It is an assured fact that all our future armies for war will be raised through a selective service system."

The men of the Selective Service with few exceptions did not have to give up their practices, but they did contribute a large part of their time and professional skill. However, they were privileged to remain at home with their loved ones and to carry on their business, so that their contribution, while important and necessary, is not to be compared with that of those who wore the uniform.

What have we as a profession to compensate for the sacrifices and service of our members in the war? We have a greatly improved physical standard which almost invariably characterizes the men who were in the service. Next, we have the broader vision, the deeper patriotism and the spiritual uplift which accompanies unselfish service in a righteous cause. The clinical advantages enjoyed by many of our best men have improved their operative technic and matured their surgical judgment which will result in a higher standard of professional skill in the years to come.

The wonderful success of the medical army in preventing typhoid, malaria and other diseases is one of the brightest pages in the history of the war. The steady decline in mortality rate in surgical cases from the beginning to the end of the war until it reached a surprising figure of less than 5 per cent. of deaths in all battle wounds where the patient lived to reach the hospital, is perhaps the most brilliant achievement in surgical history.

This, then, after all, is the greatest

compensation to our profession as a whole—the one great gain that consoles us for the loss of time, the hardships endured, the suffering and death of many of our honored members — that we have gained knowledge which will enable us to alleviate more suffering and save more lives.

An important by-product of war has always been progress in the healing art. Hippocrates said that "War is the only proper school for the surgeon." While this statement can not be wholly accepted in the present age yet many of our most notable gains have come from war. First aid and the use of ambulances were established during the Napoleonic wars. Esmarck first practiced debridement (so much used in our late war) during the Franco-Prussian War. Typhoid prevention by inoculation was the contribution of the Boer War, while the terrible scourge of yellow fever was abolished by the labors and heroic sacrifices of Reed, Lazear, Carroll and Gorgas during the Spanish-American War.

Let us enumerate briefly some of the tangible benefits which humanity will receive by reason of the lessons we have learned from the great war. Dr. C. S. Drake, Chairman of the Section on Preventive Medicine of the American Medical Association, says: "The people as a whole have learned a new lesson as to the importance of individual and national health in time of war. They have also had it impressed on them that, while hostilities have ceased the war is not over—that the period of reconstruction will make large demands on the physical resources of the Nation—and they stand ready to continue and extend those health activities which have proved effective during the past two years.

"The findings of the exemption boards and of Army medical examiners came as a first awakening shock, disclosing, as they did, a surprising prevalence of physical disability, largely preventable in character, leading to the rejection in the average community of almost 20 per cent. of the young men who were presented for military service. These findings, incidentally, demonstrated conclusively the value of one of the modern means of health promotion too generally ignored in the past—the periodic, physical examination of presumably healthy persons for the detection of early disease."

From the standpoint of preventive medicine and public health we may enumerate as other benefits of the war: the recognition of the importance of venereal diseases; the extension of child welfare activities under Government, state and local supervision — world-wide attention having been attracted to this work by the problems that confronted France and Belgium by a decreasing birth rate and a greatly increasing mortality; the development of health officials from medical officers who will bring to civil life the vast benefits of their experience and training in Army sanitation; and finally the stimulation of public interest in the public service through the influence of the four million young men who have had impressed upon them the paramount importance of disease prevention and health promotion.

As shown by the experience of the best men and reported by them in the medical literature during and since the war, surgery's outstanding gains may be summed up as follows:

The Carrel-Dakin method of treating suppurating wounds.

A revival of the use of debridement first used extensively in the Franco-Prussian wars.

The treatment of shock caused by hemorrhage with blood transfusion by the citrate method, demonstrating the great superiority of blood over salt solution. The former has real sustaining power and the latter is only temporary because osmosis soon carries it out of the vessels.

The paraffin treatment of burns.

Improved methods in the treatment of fractures and the use of the Thomas and Blake splints and the Balkan frame.

Early mobilization of injured joints.

Management of lung injuries.

Improvements in plastic surgery.

Re-education of the crippled.

FRACTURE OF THE LOWER END OF THE HUMERUS*

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Although literally the term fracture is capable of several other interpretations, from the viewpoint of surgical pathology it signifies solution of osseous continuity, regardless of the etiology, the variety or the anatomic situation involved. As the scope of this paper must be limited to the consideration of fractures implicating the lower extremity of the humerus, only a brief topological survey seems necessary.

The humerus is the most important arm bone. It articulates with the scapula at its superior and with the ulna and radius at its inferior aspect. The lower portion presents an internal and also an external condyle; extending upward, therefrom upon the shaft are the internal and external lateral ligaments and extensor and supinator muscles; from the internal condylar ridge arise the internal lateral ligament and the flexor and pronator muscles. Projecting from the lower anterior portion of the external condyle is the capitellum which receives the head of the radius; internal thereto and extending from the anterior to the posterior bony surface is the trochlea. The coronoid fossa, anterior to the trochlea, receives the coronoid process of the ulna during flexion of the forearm; the olecranon fossa, similarly situated posteriorly, accommodates the tip of the olecranon during extension.

The observation is interesting that implication of the elbow joint is frequent and constitutes one of the most serious complications of fracture of the lower end of the humerus. This may be readily understood when it is remembered that the elbow is a complicated joint with a tendency to ankylosis whenever there occurs fracture of the articular surface followed by exudate and callus formation.

"The articulation of the elbow is hinge-like, and, in flexion and extension of the forearm, the bones of the latter move upon the humerus; the ulna, with its sigmoid fossa, on the trochlea, and the head of the radius on the capitellum. The ulna moves only in this manner, but in the pronation and supination of the hand, the head of the radius rotates both on the capitellum of the humerus and the radial facet of the ulna. The articular cavity between the humerus and the radius and ulna communicates with that between the latter bones. There is no direct ligamentous attachment between the humerus and radius, but the capsular and external lateral ligaments from the former are connected with the orbicular ligament, which embraces the head of the radius and retains it in position without interfering with its movement of rotation."

Fortunately the greater number of fractures of the lower and of the humerus occur in periods of life when the prospect of preventing future deformity and diminution of function is most promising, i.e. during childhood and adolescence. Osteologic researches have shown that ossification of the lower portion of the humerus, particularly its condylar and epiphysial eminences, may be delayed until adult life; thus, at least, partially explaining the greater percentage of successful results following injury in young individuals compared with those of mature years. During early childhood epiphysial separation probably occurs more frequently than actual fracture.

Like fractures in other anatomic situations, fracture of the lower end of the humerus in the majority of instances owes its origin to external violence. The most common cause is impact of the elbow or hand on some solid object, such as accidental or intentional blows, falls, etc. The statements of text authors and others to the contrary notwithstanding, my belief is that actual fracture from muscular action alone is so rare that it may be considered a pathological curiosity; were it otherwise fractures would be more common among individuals with occupational duties requiring violent muscular exertion.

Fractures of the lower end of the humerus may be clinically divided, according to location, as (1) supracondylar, (2) diacondylar, and (3) condylar. The following more elaborate classification has been suggested as useful for the purpose of anatomic study, but it is of little importance clinically.

(1) Frequent Fractures:
- (a) supracondylar,
- (b) diacondylar, "T—," "Y—" and "V—" shaped,
- (c) transverse,
- (d) oblique,

*Read in Section on Surgery, Southern Medical Association, Thirteenth Annual Meeting, Asheville, N. C., Nov. 10-13, 1919.

(2) Infrequent Fractures:
- (a) condylar,
- (b) epicondylar,
- (c) trochlear,
- (d) epitrochlear,
- (e) epiphysial,
- (f) capitellar,
- (g) compound,
- (h) comminuted.

It would be impossible in a short paper to review in detail the symptomatology, differential diagnosis, prognosis and treatment of every type of fracture of the lower end of the humerus. Therefore these features will be discussed from a general standpoint based upon the clinical division already mentioned.

The diagnosis in transverse or oblique supracondylar fracture usually presents no especial difficulty. Backward or forward separation or displacement may be noted at the fracture site, which is most commonly just proximal to the condyles. Crepitus may be elicited in most instances; the condyles and the diacondylar space present no evidence of abnormality. In backward displacement flexion induces intense pain, but other movements may be unimpeded. In forward displacement the lower extremity of the humerus is noted above the olecranon, the elbow being anterior to the general direction of the shaft; and both extension and flexion are limited. Backward dislocation may be mistaken clinically for supracondylar fracture with posterior displacement. In dislocation, however, the angle of the olecranon is more acute, and its relationship to the condyles is disturbed; crepitus is absent, and the lower end of the humerus is forward from its normal situation; the deformity is prone to recur after adjustment.

A decidedly more serious fracture of the lower end of the humerus is the inter or dia-condylar type, familiarly known as the "Y—", or "Y—," or "V—" shaped fra the "T—", "Y—," or "V—" shaped fracture. Based upon the clinical symptomatology, diagnostic differentiation may be impossible from condylar or supracoondylar fracture in which there is little or no separation of the fragments and the ligamentous structures remain intact. Implication of the elbow joint may be extensive or insignificant; the fragments may be widely separated permitting insinuation of the shaft of the humerus between them. Not infrequently diacondylar fracture is comminuted, thus further obscuring the clinical diagnosis unless there be distinct widening of the diacondylar space.

The symptomatology and diagnosis of condylar, epicondylar, capitellar and epiphysial fractures may well be considered in the same paragraph, since clinical differentiation is usually fraught with insurmountable difficulties. In my experience, internal condylar fractures have been more frequently encountered than external; although this observation appears contrary to the teaching of certain authors. The former presents graver therapeutic problems than the latter and the prognosis as to the deformity and future functional capacity is less favorable. The radial head may be driven against the external condyle, or the upper ulnar extremity against the internal condyle, as the case may be; adduction instead of abduction of the forearm is commonly noted. External condylar fracture is usually more or less oblique, and is attended by backward or outward displacement. In the absence of marked rotation osseous relationship may remain undisturbed; but supination, pronation, flexion and extension will be found limited.

Epicondylar, capitellar and epiphysial fractures are less commonly observed than the foregoing types, and for obvious reasons accurate clinical diagnosis is seldom practicable. The ligamentous attachments are sometimes disturbed, and deformity with diminished functional capacity may be unpreventable. In capitellar fracture the trochlea may be felt anteriorly if displacement has ensued; pronation, supination and extension may remain normal; flexion beyond right angles may be prevented by joint obstruction from the displaced fragment.

Compound and comminuted fractures in any anatomic situation are usually produced by crushing external violence. The clinical diagnosis of such fractures involving the lower end of the humerus is attended by no especial difficulty; but even in these types accurate differentiation between supracondylar, diacondylar, etc., is not always easy of accomplishment. The greatest complicating dangers in compound fractures are from infection, joint involvement, and subsequent loss of function from ankylosis. In comminuted fractures there is the added risk of non-union of the fragments.

All fractures of the lower end of the humerus whether with or without joint implication are attended by swelling, tenderness and pain, sometimes deformity, crepitus, and loss of function, the symptoms thus differing in no essential respect from those induced by fractures elsewhere. The location and degree of swelling and tenderness will depend largely upon the character and extent of the injury. It may be stated as a general proposition, however, that the more extensive the causative violence the greater the degree of swelling and consequent diagnostic obscuration. Crepitus can sometimes be obtained upon careful manipulation.

In clinical examination of the elbow in cases of suspected fracture, I think it important that the patient be stripped to the waist. It is then my custom to compare both arms, identifying the olecranon and the external and the internal condyles, then the shaft of the humerus and the head of the radius, seeing if the latter will rotate, and then the ulna. All anatomic and functional difference should be noted and considered in making the clinical diagnosis.

As has been so freqently reiterated, in the determination of fracture regardless of the anatomic situation, the most important diagnostic factor is roentgenoscopic examination, and this valuable means of insuring accuracy should not be neglected in any type of fracture. Moreover, it is equally mportant as a matter of protection to the surgeon and satisfaction of the patient that x-ray plates be made by exposure at differecent angles after the fracture has presumably been reduced. In this way the surgeon may be reasurred that his work has been properly and accurately performed.

Another feature worthy of emphasis is that the final clinical examination of suspected, and likewise the reduction of all undoubted fractures confirmed by roentgenoscopy, should be undertaken only after the patient has been anesthetized. Without general anesthesia the clinical findings are apt to be misleading and the result of the examination practically valueless from the standpoint of diagnostic and pathologic accuracy. Proper reduction without anesthesia is doubtful, unsatisfactory and sometimes impossible.

The prognosis in fractures of the lower end of the humerus is generally favorable even when the elbow joint is involved. The possible subsequent complications and sequellæ are (1) ankylosis, (2) isolated paralysis, (3) cubitus valgus, and (4) more rarely cubitus varus. Although distinctly preventable, any of the foregoing accidents may happen despite the ability of the surgeon or the precautionary measures adopted. As a rule, however, satisfactory cosmetic and functional results may be secured from the rational appplication of modern surgical principles.

While there are available no general statistics to show the frequency of fracture of the lower end of the humerus as compared with similar lesions of elsewhere, it may be interesting to note that records of the Hudson Street Hospital, New York, for a period of nine years, indicate that "fracture of the lower end of the humerus had an incidence of 0.0153 per cent, in 12,-901 cases under treatment." These involved supracondylar, Y- and T-shaped, condylar, etc. In some instances comminution was so extensive from severity of the causative violence that the fracture did not correspond to any of the types mentioned.

There has always existed considerable divergence of surgical opinion with respect to the treatment most appropriate in fractures involving the l ower end of the humerus after perfection of the diagnosis. Certain observers claim that after proper reduction has been effected, by dressing the arm in complete extension favorable ultimate results may be secured. On the contrary, the majority of surgeons prefer flexion rather than extension, and with the latter my views are in perfect accord. It must not be forgotten that maintenance of accurate reduction is essential to obtain the best functional results in any type of fracture; and bearing in mind the muscular, ligamentous and osseous arrangement of the lower end of the humerus, it must be difficult to maintain the fragments in proper position after reduction with the arm dressed in extension. Contrary to prevailing opinion, it is my belief that where the elbow joint is involved, ankylosis and other unsatisfactory results are oftener due to faulty reduction than to immobilization.

The primary perequisites to a successful outcome in the management of fractures are: (1) correct diagnosis, (2) accurate reposition and maintenance of frag-

ments. In treating fractures of the lower end of the humerus, as well as elsewhere, the surgeon must be prepared to exercise his individual judgment; the methods with which he is most familiar should be employed to maintain reduction and prevent deformity. In the majority of instances I believe the best results may be secured by immobilization in the Sir Robert Jones position, or "hyperflexion," as Dr. A. P. C. Ashhurst terms it. The arm is maintained in hyperflexion by the ordinary roller bandage, adhesive plaster, or moulded splints prepared from plaster-of-Paris or other suitable material. I think "hyperflexion" is the better term as it aptly describes the position. In hyperflexion the elbow is at angle of 30 degrees or less, sometimes at 20 degrees; this depends somewhat upon the amount of subcutaneous fat, swelling, etc.

The following information regarding the hyperflexed position in the treatment of fractures of the lower end of the humerus is taken from the admirable work of Ashhurst published in 1910:

"The position of greatest stability is that of hyperflexion——flexion as acute as possible. In this position the action of the forearm as a lever is abolished. Whenever it is desired to use the forearm as a lever in rotating the humerus, the forearm is flexed at right angles with the arm, and as the forearm is moved the motion is transmitted to the humerus by means of the lateral ligaments of the elbow. In any case of fracture of the lower end of the humerus, and especially in transverse fractures above the condyles, the slightest motion of adduction or abduction imparted to the forearm will likewise be transmitted to the humerus, but will cause rotation only of the lower fragment of the humerus, thus easily producing motion at the site of fracture and distorting the relation of the fragments. In the position of hyperflexion this lever action is abolished, as the axes of the forearm and arm more nearly coincide. It is true that in full extension the axes of the forearm and arm nearly coincide and that leverage for rotation of the humerus is absent; but in full extension the forearm acts as a powerful lever in adducting or abducting the humerus to or from the body, and if any fracture of the humerus exists, the nearer it is to the elbow the more easily will the position of the lower fragment be influenced by adduction or abduction of the forearm. In the position of hyperflexion the triceps acts as a natural splint to the lower end of the humerus, being tense and closely applied to the body of the bone, covering the posterior portions of the condyles and being continued around beneath the joint to spread out over the ulna in a broad fibrous aponeurosis" (Ashhurst).

"The position of hyperflexion is best for retaining the fragments of most supracondylar fractures in place for many reasons. The lower fragment is kept flexed on the forearm by the muscles attached to the epicondyle and epitrochlea; therefore, to prevent the original deformity from recurring, the forearm must be kept flexed at any rate to a right angle, but when the elbow is at a right angle the triceps acts in a plane posterior to the axis of the humerus, so that it constantly tends to draw the olecranon, and with it the lower fragment of the humerus, backward; when, however, the elbow is hyperflexed, the point of insertion of the triceps is carried anterior to the longitudinal axis of the humerus, so that action of this muscle on the lower fragment is no longer in a plane posterior to the humerus, but tends to crowd the lower fragment directly into the place where it should be. The triceps becomes very tense in the position of hyperflexion, and it passes down behind the condyles and around under them to its insertion on the subcutaneous portion of the olecranon precisely like a sling; and so long as the position of hyperflexion is maintained with an intact triceps, posterior displacement of the lower fragment is impossible, while the direction of the fractured surface and the contact of the soft parts effectually guards against forward displacement" (Ashhurst).

Supracondylar fractures, which are oblique from behind downward and forward, the lower end of the upper fragment often ending in a sharp point on its anterior aspect are usually treated by reduction and with the elbow at a right angle and the forearm vertical. With this type of fracture, it is very evident that hyperflexion would produce an angular displacement with the apex backward.

"To maintain the position of hyperflexion I employ nothing but a roller bandage. A fold of lint, with some dusting powder, is placed in the crease of the elbow to prevent maceration of the opposed surfaces, and any abrasions, bullæ, etc., are suitably dressed. The fracture is set by combined hyperflexion, manipulation and traction, as indicated, and with the humerus in the anatomical position the forearm is hyperflexed upon the arm exactly in the sagittal plane, or inclining slightly outward (abduction of the forearm), as I regard cubitus valgus as less of an evil than cubitus varus. The forearm is now held precisely in this position, regardless of whether its bones are supinated or pronated and the application of the bandage is commenced after ascertaining that the radial pulse has not been obliterated. Starting with several circular turns around the wrist, the hand is next carefully covered in. I have seen neglect of this precaution, in cases treated by other surgeons, lead to alarming swelling of the unsupported hand. When this roller again reaches the wrist, it is carried across the upper arm as close as possible to the axilla, and passing under and around the arm is again returned to the wrist. This first turn around the arm may be drawn fairly tight, as the precaution to commence the bandage by several turns around the wrist has placed a pad of such thickness around the ulna that injurious pressure on its subcutan-

eous surface need not be feared. Neglect to commence the bandage by sufficient circular turns around wrist, in one case of which I have knowledge, resulted in a slough forming at this point. The bandage is than continued, covering the elbow as an amputation stump. The humerus may be freely abducted from the body during the bandaging, when once the forearm has been fixed to it by one or two circular turns, as therefore no movement in the elbow can take place whether it is moved or not. Finally the surgeon returns the roller to the wrist, and, without cutting the roller, bandages the wrist to the neck by one or two turns, internal rotation of the humerus and forearm en masse taking place as this manipulation is accomplished. The elbow and arm are never bandaged to the chest. The child may wag its immovably fixed elbow all it wants to, abducting and adducting the humerus as much as it pleases—it cannot disturb the position of the fragments without first overcoming the hyperflexion" (Ashhurst).

The patient, or its caretaker, if a child, is cautioned at once to report any swelling of the fingers, and I see the patient the next day after reducing the fracture. If the dressing is comfortable, it is not disturbed. On the fourth day or fifth day after the injury the bandage is cut and while the position of hyperflexion is maintained, the arm is washed with alcohol and a roller bandage is applied as before. The elbow is dressed about twice a week, and the position of hyperflexion is maintained for more than two weeks. The degree of flexion is then gradually diminished at each dressing, until at the end of four weeks the extension has reached about 90 degrees. The arm is carried in a large triangular sling, preventing further extension, for a week or two longer. At that time the sling is discarded and use of the arm is encouraged. Passive movements are never enforced. The patient is encouraged to use the arm all he can, carrying weights, in gymnastics, etc. Passive movements cause pain, callus formation, inflammation, etc., and I wish to be very emphatic in denouncing its use. As the years pass and fractures come and go, especially those around joints and more especially of the lower end of the humerus, I become more and more convinced of the truth of Dr. Lewis A. Stimson's statement.

"If you leave the arm alone, you save your time and the patient's time, and he gets well quite as promptly."

In a certain (undetermined) percentage of cases ideal results may be prevented by the complicated nature of the fracture, by the interposition of soft structures between the fragments, or the inordinate delay in the institution of treatment due to the parental objection. In such instances open operations, wiring or nailing the fragments in position, condylar excision, removal of soft tissue, useless fragments, etc., as may seem advisable or necessary, may be undertaken. Brilliant results have been reported in a limited number of cases, but I have had no personal experience with the open method of treatment.

During the twelve and a half years that I have been in practice, there have come under my personal observation twenty-six cases of fracture of the lower end of the humerus. These embrace twelve internal condylar fractures, eight diacondylar, two supracondylar, and four external condylar. Twenty-two of the patients were between the ages of five and twelve years; the other four were sixteen, eighteen, twenty-three and forty-five, respectively. There was one compound supracondylar fracture in the series. In each instance the clinical diagnosis was supplemented and confirmed by x-ray examination. In twenty-three cases reduction was easily accomplished with the patient under general anesthesia, and the fragments were maintained in position by hyperflexion. The ultimate cosmetic and functional results were satisfactory in twenty-four cases.

In one diacondylar fracture occurring in a girl, seven years of age, two unsuccessful attempts were made at reduction under general anesthesia. The arm was dressed in flexion without reduction of the fragments, and after seven years there is a fairly satisfactory functional result with loss of the carrying angle. In this case open operation was indicated, and it was suggested. However, the operation was not performed because of parental objection. This is the only case in the series which I felt should have been reduced by open operation.

In another diacondylar fracture occurring in a girl of eight years, fairly perfect reduction of the fragments was obtained under general anesthesia. They were maintained in position by hyperflexion and at the present time the patient has a reasonably good result with fair use of the arm without any loss of the carrying angle.. Attempts had been made twice under general anesthesia by the family doctor, who tried to dress the fracture, but could not

maintain it in position after he had reduced it. He did not try to hold it in position by hyperflexion.

Another diacondylar fracture, with which there was also a "T—" fracture into the joint, and both external and internal condyles were fractured, was very difficult of reduction. This was in a female forty-five years of age. Under general anesthesia the fracture was reduced and the arm bandaged in hyperflexion. I proved by the x-ray that the position was good, and so treated it in the usual way after reduction. The patient has a very useful arm, but cannot entirely extend it.

The three cases which I have described in detail were the most difficult ones encountered. The other patients obtained full use of their arms in a reasonable time.

DISCUSSION

Dr. W. B. Owens, Louisville, Ky.—I wish to touch only upon two topics. First, the proper reduction, which he has mentioned, is the most important of the entire procedure, much more so than the maintenance of reduction, and that applies to all types of fracture. It frequently is not possible to accomplish all types of reduction by the closed method, but in practically all cases it is. In his twenty-six cases he only found it necessary to resort to the open method once. We should never resort to the open method, provided we have reasonable assurance that we can succeed by the closed method, as it is a much more serious procedure. Anesthesia is necessary in practically every case and it is also necessary for thorough examination.

Another important point is that we should examine these cases carefully for nerve injury. It is very discouraging to find that bony union is complete and reduction perfectly made and the individual has loss of motion. That has happened, and we can not explain that condition very well. Of course, the individual will not attempt to move his hand unless the nerve is tested out. In the production of function I feel that some points are very essential, primarily, early and frequent inspection of the fracture. Do not allow the dressings to remain on for six weeks without inspecting the joint. The Doctor mentioned two inspections a week, which I think are ample. In young individuals these fractures unite very early—I think in about three weeks. As soon as mobility has been attained we should begin our motion. I think the best method for the reduction of gravity atrophy is heat, mild massage, passive motion and, lastly, active motion. All of these measures should be employed up to the point of pain and then stopped. We will never produce any distortion or produce damage if we allow pain to be our guide. If we go beyond that point we are apt to produce damage.

Dr. Marcus Skinner, Selma, Ala.—I have been greatly interested in elbow surgery since serving as assistant to Sir Robert Jones. I have seen him treat many of these cases and I feel that in describing his after-care I am accurate. The setting of the fracture as described by Dr. Vance was quite accurate, but I do not think that he emphasized sufficiently the after-care. After reducing the fracture, Sir Robert takes two strips of adhesive plaster and passes them around the arm and forearm in a circular fashion to maintain the acutely flexed position. He then takes the bandage and further secures the fixation by a figure-of-eight bandage, taking in the elbow joint. A little leather wristlet is applied about the wrist and a similar collar is applied around the neck. Through these two leather cuffs a bandage is threaded and the ends tied together. At the end of two weeks' time the joint will be about free from swelling and tenderness. Mobilization of the elbow is then begun. At this time the straps are loosened and the elbow extended, I should say, about ten degrees. If the joint easily comes into this new position, one is reasonably sure of getting a good result. The adhesive plaster and bandage are removed and the wrist is slung in this new position from the neck, and the patient allowed voluntary use, motion being checked from undue extension by the attachment to the neck. The degree of mobility is gradually increased and at the end of six weeks' time extension will be usually complete. If extension is not quite complete, gas and forcible extension secure it at once. I feel that if Sir Robert says anything about fractures of the elbow in his talk that is the way he will describe the treatment with which his name has been associated.

Just a word about fracture of the neck of the radius. That, I think, is an operative fracture from the time it is sustained. Myositis ossificans follows this fracture more than any other juxta-articular fracture. Treatment is to remove the broken fragment at once, as it can not be reduced by manipulation.

An important consideration in the treatment of fractures of the elbow is that immediate operation ought to be done if the fracture can not be reduced. After a careful effort at reduction by a man who is familiar with the setting of bones has proved of no avail, then immediate operation is far better than to wait two or three weeks while valuable time is lost.

Dr. Joseph C. Bloodgood, Baltimore, Md.—I do not believe I can add anything to the discussion except to emphasize my delight at seeing the younger field take an interest in fractures. Of course, the position in which these fractures are placed is an old position and, as we found during the war, so far as the treatment of fractures was concerned and the use of splints, our predecessors had solved these problems. These young men have found the best position to be that described by Smith, of Boston. They have emphasized the one thing about fracture, fixation of fracture without motion, although it may not interfere with the healing adds materially to the healing. The nutrition of bone and joint depends upon the function. Bilbroth asked many years ago why fracture of the clavicle, where it was impossible to immobilize, healed quicker than any other fracture. Since then experimental

work has been done and it has been found that if one puts on a plate with two or three screws above and below and then takes a fine saw and saws the bone through it does not heal. No bone is thrown out. It has been demonstrated for us that a certain amount of motion is necessary for bone formation. These three men have emphasized the most important point in the after-treatment of fracture, that some motion is necessary, and even that little motion of a few degrees adds tremendously to the earlier function of the elbow joint, and perhaps prevents a certain number of cases of ankylosis. We must remember that we got that from a French surgeon, who got good results without any fixation at all. The worst part of the treatment of fracture is its reduction. I believe the surgeons who taught me in 1890 were more familiar with the treatment of fracture than we are today, but they did not understand this point in the after-treatment of fracture. Patients can be told how to move a joint properly within any kind of dressing.

Dr. George A. Hendon, Louisville, Ky.—I wish to mention a point in connection with the diagnosis of fractures of the lower end of the humerus that I think is worthy of being called to your attention. There are three anatomical landmarks that I have never seen obliterated, no matter how much swelling there may be or what accompanying damage may have occurred in connection with the injury: namely, internal, external condyles and olecranon process of the head of the ulna. When the arm is in extension a line drawn horizontally between the two condyles will just touch the tip of the olecranon process. In dislocation of the elbow this relationship is invariably destroyed or in any fracture between the condyles. In normal conditions the head of the radius can always be felt to rotate a thumb's breadth below the external condyle, but in a dislocation this movement in this location is lost. I mention these points as being of great value in differentiating between a fracture and a dislocation. I have seen this mistake made and very distressing results followed.

In regard to treatment, in fractures of the lower end of the humerus the posterior gutter splint, so universally used, is not only without value, but is harmful. However, there is an anterior gutter splint which is of greatest service for the treatment of supra-condylar fractures.

Dr. Willis C. Campbell, Memphis. Tenn.—These fractures about the elbow are, of course, too complicated to discuss in all of their different phases, but there is one particular fracture which has been discussed more freely, and that is the supra-condylar fracture of the end of the humerus. I agree with the essayist that we should use hyperflexion in these cases, and in most of them it is the only method of treatment. It depends, however, upon the displacement of the fragments. In a certain number of cases we have the lower end of the humerus displaced forward so that it impinges upon the anterior aspect of the lower end of the proximal fragments. In that position hyperflexion would further increase your deformity. In that type of case we should undoubtedly treat with the arm in extension. If you test these cases under the fluoroscope you will see that extension is about the only position in which you can retain your reduction. We must be careful not to obtain too much extension, as you may produce posterior dislocation of the elbow in those cases in which there is considerable relaxation of the joint. That last type we undoubtedly sometimes see. I have had that misfortune myself in that type of case and would like to mention this precaution.

Another thing is the control of the rotation of the lower fragment in the hyperflexion. In some cases I have not been able to control the rotation of the lower fragment.

Dr. Duncan Eve, Nashville, Tenn.—This subject is of much interest from the fact that the old plan of treatment has now almost been relegated to the past. We can not help rising to endorse the present methods. I did not have the pleasure of hearing all the paper, but have heard discussion of the gentlemen that have preceded me.

In this country, Dr. A. P. C. Ashhurst, of Philadelphia, is given the credit of the hyperflexion treatment of fractures of the elbow. Ashhurst has demonstrated its many advantages that were not before known and, therefore, we owe much to the Philadelphian.

Hyperflexion is as potent in the control of the carrying angle as it is for leverage. The axis of the arm and forearm in hyperflexion coincide and thus the carrying angle is usually maintained. Experience has determined that any flexion short of hyperflexion does not prevent the lever action of the forearm. With the elbow in the acutely flexed position, the triceps acts as a natural splint of the lower end of the humerus, for it covers the posterior surfaces of the condyles, spreads out over the joint as an aponeurosis and prevents rotation of the lower fragment of the humerus when reduced, especially if the line of fracture is oblique.

In fractures of the elbow there is usually considerable swelling, and this makes the early diagnosis quite difficult, and in all cases the x-ray should be used and examination with reduction made while the patient is under ether. If swelling is too great to determine a diagnosis, it is well to wait until much of the swelling can be reduced by one of the following methods:

Bandage the arm and forearm; rest it in a semi-flexed position upon a pillow, and apply evaporating lotions or even an ice bag for a day or two; or, use Gerster's plan of applying an Esmarch bandage from the hand to well above the seat of fracture, which will drive away extra-articular swelling in a day or two and permit a thorough examination and treatment.

Except in supra-condylar or transverse fracture above the condyles, reduction is best effected by drawing upon the forearm, supinating it, extending it and then bending it slowly into a position of acute flexion, the degree of flexion being in inverse ratio to the amount of swelling.

In supra-condylar fracture reduction is effected by drawing the forearm and the lower fragment downward and forward while at the same time pushing the upward fragment backward. It is possible in most instances to carry the flexion

from 20 to 30° in recent fractures. Always observe the pulse.

For immobilization no splints or mechanical appliances are used, but simply a bandage or adhesive strip (sometimes both) to hold the forearm in the hyperflexed and supinated position, with employment of early passive movements and massage.

Dr. Lucius E. Burch, Nashville, Tenn.—I should like to call attention to one point in fractures of the lower end of the humerus that is often overlooked, that is an x-ray picture of both elbows in children. If this is not carried out in very young patients, we are likely to misinterpret the plate.

Dr. Bloodgood stated that reduction is always easy. I have not found this to be the case. I consider reduction the most important part of the treatment. If the reduction is complete, then the after-treatment by means of the Jones splint is easy.

I think that Dr. Eve failed to explain fully his point in regard to postponing reduction of fractures for several days on account of swelling. I judge that he refers to those cases that have been brought in late, where the swelling has already taken place. I do feel, however, that if the case is seen early, immediate reduction should be carried out.

Dr. A. F. Caldwell, Atlanta, Ga.—Just one word in regard to what is probably the most difficult one of these fractures. That is, the compound fracture of the lower end of the humerus, possibly extending into the joint. While they were more frequent in war work than in civil life, we still do have them to contend with, and while there is the question of dressing the wound, the suspension and traction was found very useful in the treatment of these war wounds in Paris. In this method we used the Balkan frame over the bed and then put adhesive bands on the front of the forearm that came up to here (indicating) and the forearm was suspended with just sufficient weight to balance the arm nicely this way. Naturally, where there is a fracture, that gives a slight inclination of the lower arm. That is overcome and the extension is very small. Its principle is to bring the fragment into place. A simple band of muslin three or four inches wide, double, is passed around here (indicating), and the ends are crossed and brought around here (indicating). A weight is then applied and passed over the pulley at the side of the bed at the level of the arm with the patient reclining in bed. Counter-traction is supplied by the patient turning in bed. The dressing can be changed as frequently as necessary, or the Carrel treatment can be carried out very easily and the result can be watched every day. It gives a very good result in the compound fractures, and in the simple cases in which the flesh wound heals it gives perfect motion to the wrist joint and early motion to the elbow joint. This is one of the points that have been brought out in fractures of this kind. It is very useful in those cases that are compound, because they are very difficult to handle in any other way.

Dr. Vance (closing).—A good many of the points that were raised in the discussion were covered fully in my paper which I did not have time to finish reading.

In reply to the doctor who preferred the Jones method of putting up fractures of the lower end of the humerus to that of Ashhurst, I would say that in my hospital training I was taught the method of Sir Robert Jones, and I used that method until Dr. A. P. C. Ashhurst's "Gross Prize Essay on Fractures of the Lower End of the Humerus" was published in 1910. I tried his method and liked it so much that I discarded the Jones method and have never used it since. I find that Dr. Ashhurst's method is easier to apply and very much more comfortable to the patient. I leave the arm as in the position of the first dressing for two weeks and then gradually lower the forearm as Dr. Skinner has told you in his discussion. In children, I usually get the forearm down in three weeks; in adults in four weeks.

Dr. Skinner discussed fractures of the upper end of the radius and the ulna, a subject which my paper did not include.

Dr. Campbell spoke of supracondylar fractures which are oblique from behind downward and forward, the lower end of the upper fragment often ending in a sharp point on its anterior aspect. I agree with his conclusions except that I have not been able to keep the fragments reduced in extension. This is the one type of fractures of the lower end of the humerus that can not be placed in hyperflexion, for it is very evident that hyperflexion would produce an angular displacement with the apex backward.

I dislike very much to disagree with Dr. Eve in his statement that these fractures should not be reduced until the swelling has subsided. In my experience, the longer you postpone reducing the fracture and applying the permanent dressing, the more swelling there is. The worst fractures I have seen were those that had been allowed to go unattended for several days. I believe the best time to reduce any fracture and apply the permanent dressing is just as quickly as one can do it well.

A NEW OPERATION FOR SUSPENSION OF THE UTERUS*

By F. G. DuBose, M.D., F.A.C.S.,
Selma, Ala.

On account of the ultimate failure of other operations in a large percentage of cases of retroverted or prolapsed uterus, I am presenting one which has permanently held the uterus in the desired position in a large series of cases over a period of time apparently sufficient to determine its efficacy.

TECHNIC

A linen or silk thread on a full-curved needle is carried through the broad liga-

*Read before Southern Surgical Association, New Orleans, La., December 18. 1919.

ment, as a running stitch, close to and immediately underneath the round ligament, beginning at the internal abdominal ring, carried across the fundus of the uterus, engaging superficially under the peritoneal coat, passing underneath the opposite round ligament until the other internal ring is reached. The needle is unthreaded and a ligature carrier is passed through the aponeurosis of the rectus muscle about an inch from the abdominal incision, and on a level with the internal abdominal ring, through the musculature of the anterior abdominal wall until it emerges from the parietal peritoneum at the internal abdominal ring. The linen suture is threaded on the carrier and drawn through the abdominal wall.

The same technique is carried out on the opposite side. Then both ends of the thread are caught and the uterus pulled up to the desired position. Two hemostats are then applied to the thread; one on either side where it emerges from the aponeurosis of the rectus muscle. The peritoneum is then closed, the aponeurosis of the rectus muscle sutured, and while the forceps are still in position, the linen suspension thread is tied. The placing of the forceps here described prevents the drawing too tightly on the suspension suture, which would bring the uterus too far forward, and possibly so narrow the space between the uterus and abdominal wall as to result in hernia or obstruction. The hemostats are removed after the tying

Cases Operated Upon for Suspension of the Uterus, by F. G. DuBose, at Vaughan Memorial Hospital, from March 1, 1919, to November 30, 1919

Case	Date	Operation	Coincidental Surgery
1	May 1	Suspension	Appendectomy and Perineorrhaphy
2	May 17	"	Appendectomy and Double Salpingectomy
3	May 17	"	Appendectomy, Left Tube, One-Half Left Ovary and Right Ovary Removed
4	May 17	"	Appendectomy, Left Salpingectomy
5	May 21	"	Appendectomy, Double Salpingectomy
6	May 27	"	Appendectomy, Double Salpingectomy, Part Right Ovary Removed
7	May 31	"	Appendectomy, Double Salpingectomy, Rectocele and Perineorrhaphy
8	May 26	"	Appendectomy, Double Salpingectomy, Perineorrhaphy
9	July 7	"	Appendectomy
10	July 9	"	Appendectomy
11	July 30	"	Appendectomy, Double Salpingectomy
12	Aug. 3	"	Appendectomy, Left Ovariotomy
13	Aug. 14	"	Appendectomy
14	Aug. 28	"	Appendectomy
15	Aug. 29	"	Appendectomy
16	Sept. 3	"	Appendectomy, Perineorrhaphy
17	Sept. 8	"	Appendectomy
18	Sept. 15	"	Appendectomy, Left Salpingectomy
19	Sept. 23	"	Appendectomy, Double Salpingectomy, Right Ovariotomy
20	Sept. 29	"	Appendectomy, Left Tube and Ovary, Two-thirds Right Tube Removed
21	Oct. 2	"	Appendectomy, Left Tube and Ovary Adhesion to Uterus
22	Oct. 4	"	
23	Oct. 14	"	Appendectomy, Double Salpingectomy, Perineorrhaphy
24	Oct. 15	"	Appendectomy
26	Nov. 8	"	Appendectomy, Left Tube and Ovary Removed
27	Nov. 8	"	Appendectomy, Left Tube and Ovary Removed
28	Nov. 20	"	Appendectomy, Right Ovary, Trach. and Perineorrhaphy

There were in this time one hundred forty abdominal sections on women. Thirty-eight had suspensions. Twelve were operated upon for retroversion primarily, and other surgery done coincidentally. One Suspension done exclusively.

Cases Operated Upon for Suspension of the Uterus by D. H. Doherty, at Burwell's Hospital, from May 17, 1919, to November 30, 1919

Case	Date	Operation	Coincidental Surgery
1	May 14	Suspension	Salpingectomy
2	May 31	"	Appendectomy, Salpingectomy, Right Ovary Removed
3	June 22	"	Appendectomy, Double Salpingectomy
4	June 29	"	Appendectomy, Double Salpingectomy
5	July 5	"	Appendectomy,
6	July 6	"	Appendectomy, Left Tube and Ovary Removed
7	July 23	"	Appendectomy, Double Salpingectomy
8	Sept. 21	"	Appendectomy, Double Salpingectomy
9	Oct. 28	"	Appendectomy, Double Salpingectomy

In this service, there were twenty-nine abdominal sections on women. Of these, nine had suspensions of the uterus by this method and additional surgery as noted. One only was primarily operated upon for retroversion of the uterus.

of the suspension suture. The closure of the abdominal skin incision is then completed.

COMMENTS

The operation described has given uniform satisfaction.

It has been done more than fifty times without a failure in any instance to correct the retroverted uterus.

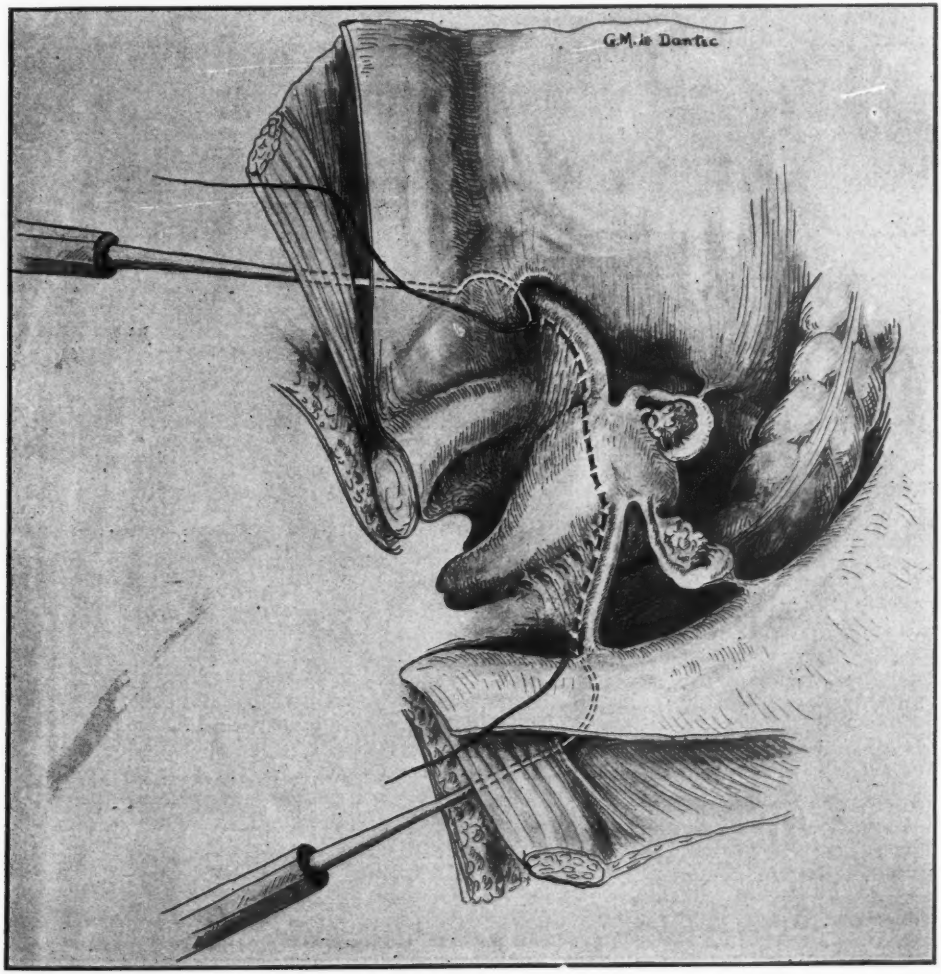
It has also been used in the milder cases of prolapsus uteri with good results, in all of which cases, however, the repair of the injuries to the pelvic floor has been coincidentally done.

It disturbs the anatomy of the pelvic organs in a less degree than any of the other suspension operations.

It takes the stress off of the attenuated round ligaments and allows them to regain their tonicity, while securely holding the uterus in position.

It neither fixes nor interferes with the normal range of mobility in any way.

It does not interfere with fecundity,



I.—Diagramatic drawing showing insertion of suspensory silk or linen thread through abdominal wall, emerging at the opening of the internal ring, traversing broad ligament and fundus of the uterus.

and it is impossible for dystocia to result in the event of pregnancy following this operation.

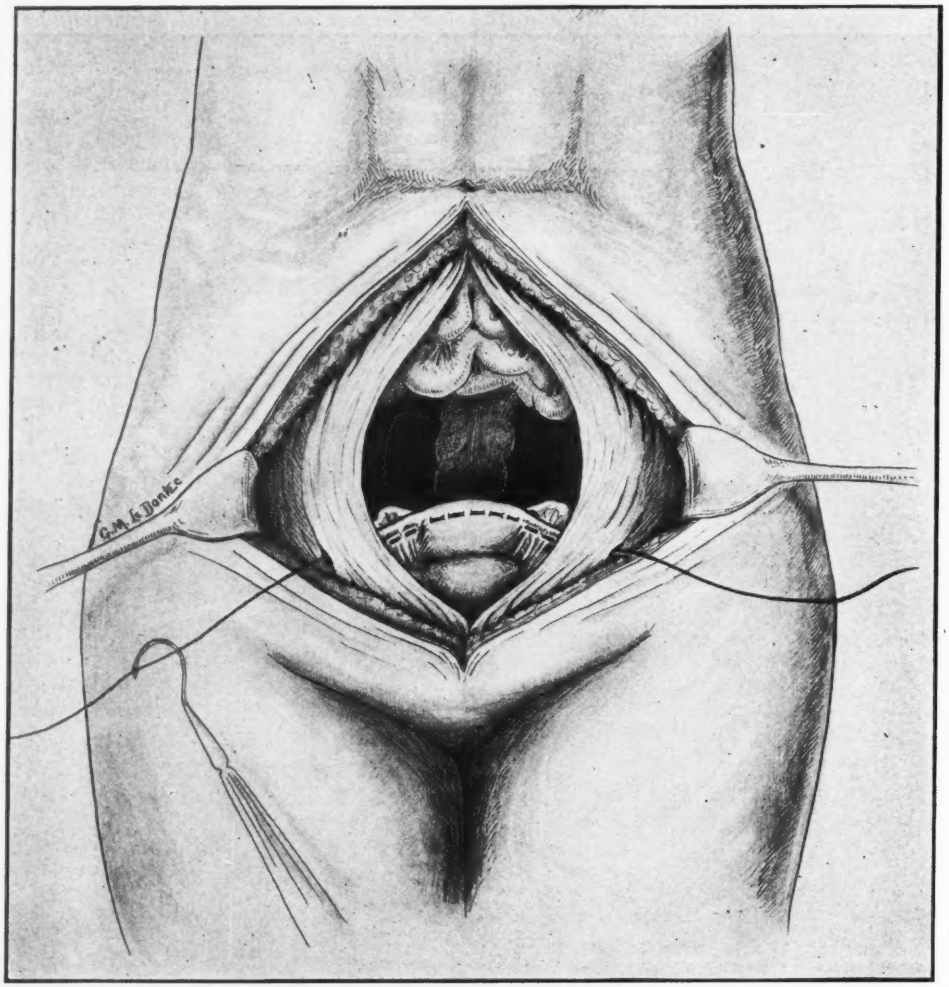
The area of suspension is equal to the area of support and the point of support is not concentrated in any one peritoneal area, but is uniformly distributed so that it is hard to conceive that any reflex nervous irritation could arise from it.

There is no raw surface left to produce adhesions.

The ultimate disposition of the linen thread is to be replaced by a fibrous ligamentary cord, due to fibroblasts thrown into the meshes of the linen thread, which eventually disappears.

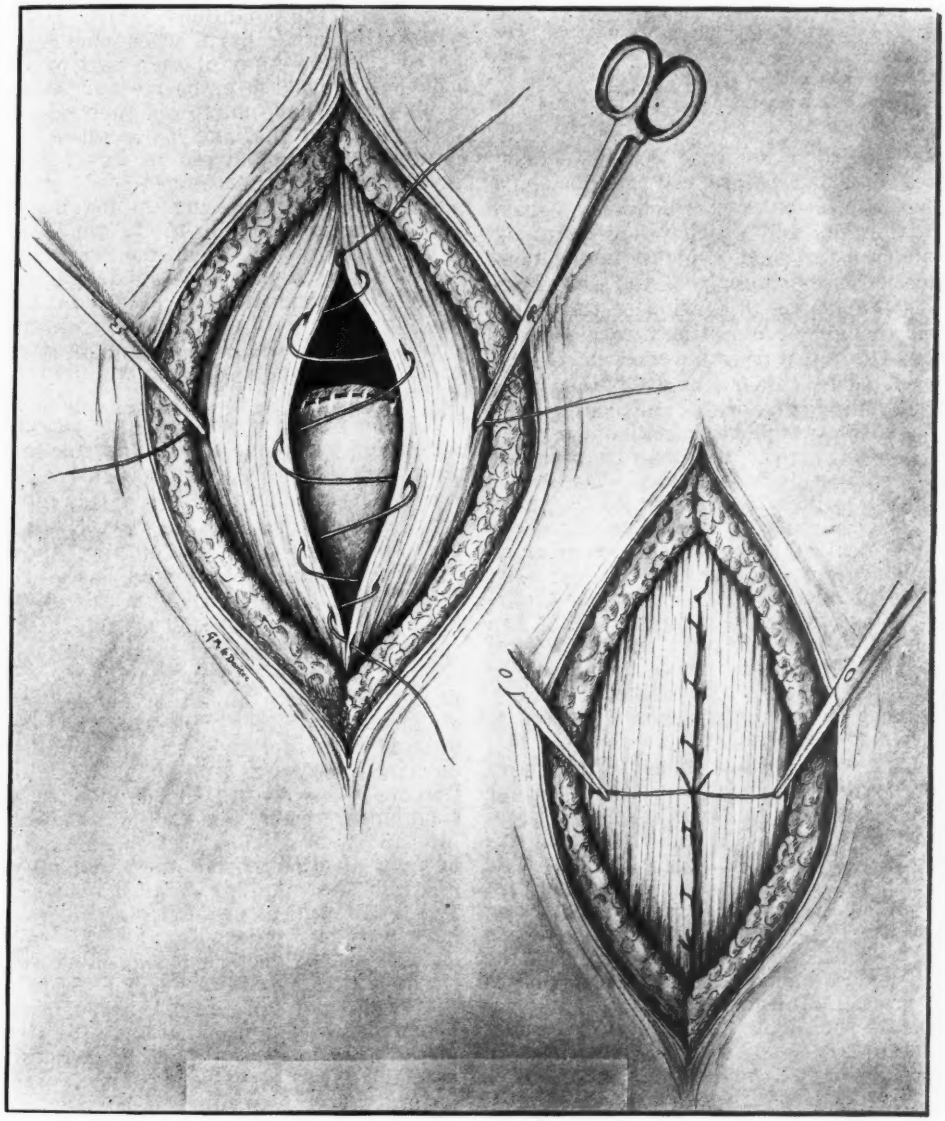
It is recommended because of its simplicity, and the ease of its performance after such other abdominal surgery has been done.

In one hundred sixty-nine sections on women, there were thirty-seven suspen-



II.—Insertion of linen suspensory thread as it appears at the completion of this stage of the operation.

sions done. Twenty-three per cent. of all cases, in women, coming for abdominal surgery had retroverted uteri. Fourteen operations were done for retroversion primarily. Twelve per cent. of all abdominal sections in women admitted were for this condition.



III.—Showing application of forceps in upper in sert and the suspensory thread holding uterus in desired position of anteversion. Lower insert shows linen thread tied after closure of abdominal incision.

EYE, EAR, NOSE AND THROAT

SCIENTIFIC TEAM WORK IN DIAGNOSIS AND TREATMENT OF DISEASES OF THE EYE, EAR, NOSE AND THROAT*

By E. H. Cary, M.D.,
Dallas, Tex.

As Chairman of this Section, I had hoped to bring before you, gentlemen, a record of a bit of work which has engaged my attention, and which would definitely establish a few mooted points in the sympathetic nervous supply of the eye as regards the control of tension of the globe. I had thought of reporting a case of some interest to me, a neurofibroma which I removed. The tumor involved the optic nerve, filling the orbit and fixing the globe with consequent exophthalmos. The globe was saved, and the subsequent changes, loss of tension and the after-results in which the tension of the globe was more or less restored, brought about a good deal of thought and a number of experiments which I have had under way. But in a conference with our Vice-Chairman, Dr. Stucky, he suggested that we write a joint paper on a more practical subject, which might prove to be of general interest and at this time opportune, inasmuch as the subject chosen represents a problem facing all of us.

Having in mind two papers which I have read before this Section, first "Ocular Manifestations of Fifth Nerve Irritations," and second, "Aural Phenomena the Result of Unusual Influences," I find this subject in line with those, for in the first I adopted that method of demonstrating how utterly fallacious it was to limit one's self to ophthalmology and lose sight of the rhinological and otolaryngological phases of the case. In the second, I tried to demonstrate the fallacy of being a rhinologist and oto-laryngologist without being an ophthalmologist, not saying so in words, but by demonstrating that a man must have a broad and practical knowledge of the nervous system of these parts, its control, and of the conditions which might distress the other parts when one is involved. As the study of each part of our body has proven so extensive and so absorbing, men have narrowed their vision, losing sight of the body as a whole, the picture becoming blurred in direct ratio as time is spent in prolonged study of detail. However interesting the detail may be, its practical relation to the whole can be easily forgotten. Then, too, we can be the victim of a name, very descriptive, such as ophthalmologist. We can also easily drift into an attitude of condescension when a friend who has adopted the adnexa with equally alluring title appears on the scene.

No one will deny the value of specialization and every one admits that the man most competent in a given specialty is the one who has had a broad foundation in the various departments of medicine, a generous practice of the art, and an opportunity to formulate an opinion, based upon a well-established routine in the life of the young doctor, such as an interneship can offer in a hospital organized with modern conception of its full duty to the public. Yet with all these fundamental circumstances which surround the well-ordered and thoroughly-trained man in medicine, there was a need for specialization and the study of the body of man was subdivided, oftentimes for convenience, into all kinds of classifications. All this brought about intensive study, exhaustive research and infinitely detailed knowledge which the medical profession would never have possessed otherwise, and the world as well as the doctor has benefited from the fact that specialization has become a practical and profitable arrangement. When men became isolated from the study of the body in general in their pursuit of special knowledge of some part, it was a natural step for an effort to be made, here and there, to bring together men possessing this detached information so that it might be used for the common good.

The expert surgeon was no doubt the

*Chairman's Address, Section on Eye, Ear, Nose and Throat, Southern Medical Association, Thirteenth Annual Meeting, Asheville, N. C., Nov. 10-13, 1919.

first man to realize that although he might perform unique operations in which he would develop a marvelous skill, the demands upon his time, growing out of this same skill, made him more of a mechanician than a broadly scientific physician. A conscientious man in due time either found it necessary to face about and curtail his surgery for a study of his cases or turn to a helpmate not skilled in the mechanics of repair, but in the comprehension of disease. This naturally broadens the outlook of both, with the correlation of knowledge following a regrouping of specialists in different departments, conscientiously disposed to serve the public. I doubt that there has ever been a time since medical education was seriously conducted, when group practice in a limited way was not carried out; but it is within the memory of all of us that a determined effort was made to correlate for the good of the individual the knowledge the specialist possesses.

There have been striking examples of outstanding successes in all departments of medicine if we measure that success by the toll paid in dollars and cents by humanity for these services. When we think of them we recognize the difficulty a surgeon would have in grouping men of such attainments; the same difficulty would face the physician, for fundamentally these are the two branches which would naturally lead in grouping. Whenever we think of a group of men and analyze them we find the dominating force has been either a surgeon or physician, and candor will lead one to say that the group surrounding this figure has not been chosen for their particular accomplishments, but for their evolutionary value, and most frequently they have been men who could be employed on a salary basis. As an example, an ophthalmologist with sufficient distinction to command fifty thousand a year would be out of the question in such a combination, and this is true in other lines. This does not argue that the principal is not a good one; that men who have specialized to the point of excluding from their minds the thought of the body as a whole should not be brought together with this knowledge; nor is it bad for humanity for a strong man to draw around himself medical men not so strong, perhaps, but who in the end find themselves more efficient for the association.

The question with ophthalmologists, rhinologists and oto-laryngologists represented by the type of men who are my hearers, is: what is it wise for us to do so to conduct our practice that we will not lose sight of the body as a whole, and not be guilty of practicing medicine from just one point of view; and at the same time avoid being enmeshed in a group the monetary results of whose efforts, when divided, would make this valuable correlation of ideas too much of a luxury.

It seems simple enough to get your patient to go to the internist. "Let us have his opinion; go have a radiograph made; go to the laboratory, have your blood and excreta examined; go to the skin man, who can tell us about that rash; go to the neurologist and have his opinion; now, be certain to see the dentist, for you have what appears to be a pyorrhea, and certainly the x-ray plate shows granuloma at the root of one of these teeth. Now, since I am strictly an ophthalmologist and am not supposed to look at noses or throats, have the oto-laryngologist look at them."

In this bewildered state of mind, the patient struggles for relief, provided his purse and confidence hold out. If the ophthalmologist had no better way of finding out the basis of the trouble which seemed to be not of local but of general origin, to be faithful to his patients it would be necessary for him to adopt some such plan of trying to find out from others what is wrong. In all probability, following this plan, and accepting in good faith the various statements made as facts not to be controverted, the ophthalmologist would find himself with a series of diagnoses, one of which he might choose to be the cause, which being true in part, yet might not be sufficiently comprehensive to make it possible for him to relieve the patient.

An ophthalmologist must be better than that, and he must have some plan which makes it possible for him to conclude definitely for himself a patient's trouble, evaluating the correlating facts as he has gathered them on a basis which will establish the correct diagnosis. It is possible in all well-organized hospitals throughout the country for an ophthalmologist who

is also an oto-laryngologist so to organize his department that he can practice his profession in an intelligent manner, weighing for what they may be worth the statements of all the different specialists which might have a bearing on the case. But to do so, he must retain his interest in general medicine and surgery; must know how to read for himself x-ray plates; he must be a clinician in the broadest sense, and he must estimate things in harmony with his clinical knowledge. This leads one to an advocacy of an ever-growing hospital practice, with its facilities, and a more limited effort in his office, to come to conclusions which can only be reached with all the facts in hand. Group practice, then, is desirable whether it be from the point of view of a surgeon dominating the situation, a medical man, or an ophthalmologist. Well organized hospitals offer the only practical solution for this interesting problem, and medical men should adopt a plan as comprehensive as the hospital can be made to offer; for otherwise the cost of service is so great that patients are denied the correct solution of their troubles.

In recent years we have grown to devote from four to six hours, as a morning's work, in an operating room in a general hospital where every possible means for concluding a diagnosis and every facility for operating is provided. There is a trained anesthetist, a graduate in medi- who limits his activities while we are in the hospital to my service, and although we have internes and a well organized training school, the hospital provides a graduate nurse who has complete charge of all the details in the operating room. There is an associate who reaches the hospital at an early hour and who sees that the patients are properly classified and placed. The operations are planned in a way that all the clean cases are taken care of first and the others afterward. This detailed care of each case is in the hands of either my assistant or associates on the staff as they are needed; the laboratory and x-ray department are close at hand. All cases are seen, a history written, with all the findings placed thereon, a diagnosis made; a blood clotting time is taken in all cases where bleeding could follow the operation, as in an operation on the nose or throat; there is an interchange of opinions with those who may be needed in a given case, just as I am called in on all medical and surgical cases where I might be of help to other members of the staff; this routine is followed judiciously for the good of all. If there should be a situation arising from toxemia of any character, the internist, the neurologist, the dentist, and the surgeon, which includes myself, are likely to find the source of the trouble and to remedy the cause. And without any reflection upon a report of isolated cases coming up in the practice of men doing our line of work (which reports have their undoubted value) these cases which are reported as being of marked interest in the field of toxic disturbance are so frequently met with in a combined practice such as I describe in our hospital that they are of daily occurrence and are not considered of any special moment. You will pardon the allusion to my own practice, but it is illustrative of the points involved, and I feel it is a plan which could be adopted everywhere, and the following of it could be made of service to humanity.

This brings up the question of whether or not it is wise to have hospitals restricted to the treatment of diseases of the eye, ear, nose and throat, or any other specialty; or if it is not a better plan to have no special hospitals at all, at least in the smaller cities, but general ones with special departments wherein the plan as I have meagerly outlined it is used. It might seem that this is far better, inasmuch as the service is economical both of time and money, and in this way reaches the highest efficiency for the good of the people who come for service.

I find that what I have to say from the standpoint of the ophthalmologist applied equally to the ear. nose and throat; I can not avoid poaching upon the grounds of my good friend who follows. I have stated the general principles and expect him to bring out some specific points which I know he will utilize in a special manner, following the general principles I have outlined.

TEAM WORK IN PRACTICE OF OTO-LARYNGOLOGY*

By J. A. Stucky, M.D.,
Lexington, Ky.

Some years ago in a paper read on "Team Work in Oto-Laryngology," I emphasized the necessity of the oto-laryngologist's being either a good "all-round" man and doing some of the work of the internist and bacteriologist, or having the intimate co-operation of experts in those departments to assist him in coming to a positive diagnosis and conclusion. Since then, rapid and important strides have been made in all departments of our profession. From "team work" we have advanced to "group study" and "group practice," and now every large city and many small ones and the majority of our best hospitals have adopted the plan of group study and group practice of all cases, by which is meant a number of men, specialists in the different fields of medicine, surgery and allied departments, occupy a building arranged for the convenience and helpfulness of each, and combine their investigations and care of their patients in such a way as to get the best results from their efforts and in that manner secure accuracy in diagnosis and etiology in each case and minimize loss of time, energy and anxiety both for the patient and the physician. It is not my purpose to enter into a discussion of this very great subject and problem. Any decided side-step from the old beaten path of the established "straight - and - narrow way" will cause surprise and objections on the part of laity and the profession. A most interesting and profitable paper read at the last meeting of the American Medical Association in the Section on Ophthalmology by Dr. F. Park Lewis, "Group Study a Necessity in Practice of Ophthalmology," with the discussion that followed, suggest many valuable and important points for the most careful consideration of every thoughtful, progressive student of any branch of the science of medicine.

In my work I have found many cases where the occult cause of some of the most serious diseases I was treating could not be found in the study of the organ presenting grave clinical symptoms, whether it was the eye, ear, nose or throat, as subsequent events and results showed. The local clinical manifestations were of remote focal or systemic origin. Many of my cases were not relieved of their distressing, ofttimes harassing local symptoms by any application or surgical procedure resorted to until an intensive, correlated study of the body had been made and the specific cause removed.

Not only is team work or group study eminently advantageous in arriving at a correct diagnosis and ascertaining the true etiology of a given disease, but team work (by this I mean assistants, trained, and who are accurate and tactful) should assist us at all our operative work and much of the routine treatment be given in the office. By having this, the operator is not only relieved of detail of preparation, consisting in selection and arrangement of instruments necesary and accessories helpful, but time and energy are saved for both himself and patient. The anesthesia is shortened and shock minimized. Especially is this true where a delicate, semi-tedious operation is done under local anesthesia, and when all the special senses of the patient are alert and hypersensitive except the local operative field anesthetized.

On more than one occasion I have heard from a patient language something like: "I was not frightened nor nervous after you had started with the operation, because I soon felt that all helping you were interested and anxious to do what was necessary for my good." I am more and more convinced that we as scientific men do not understand and appreciate as we should the psychology surrounding our operating and treatment room at the time we are dealing with the average man, woman or child.

There is necessity for team work and group study not only for scientific, but for economic reasons, and our ideal will be nearly attained when the diagnostic, operative and treatment institutes are established. This can only be brought about by the correlation of different experts, constantly in touch with each other and working hand in hand for humanity. Thus

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Thirteenth Annual Meeting, Asheville, N. C., Nov. 10-13, 1919.

will history again repeat itself as presented by the ideal advocated by Francis Bacon and promulgated by him over three hundred years ago (Duane).

In the general hospitals of the average small city and town it is difficult to have good team work and accurate service unless there is a special department in which nurses are qualified for this work. The average interne in these hospitals takes little interest in eye, ear, nose and throat work unless he is looking ahead to doing this special work.

One of the most important adjuncts to the team work is the anesthetist, one who knows the operator's method and technic and hence can intelligently regulate the anesthesia. A few years ago, in reply to a question asked the most prominent and best known surgeon in America as to how he accounted for his success and the rapid development of his work, he replied: "It is due to the man on the other side of the table and the anesthetist at the head." There is much food for thought in this remark.

The nurse must be familiar with the instruments, well trained, well drilled as to the effect of local anesthesia, and her presence and that of the first assistant, and especially the latter, when using a local anesthetic, adds confidence to the patient and dignity and importance to the operation. Unfortunately there is seen frequently a tendency to sacrifice accuracy for speed, and as the result of this I have in more than one instance, a few months after the operation, seen the evidences of mutilation of the parts as shown by cicatricial tissue and contraction of the soft parts resulting from lack of the care and time that should have been given the operation.

The same number in the team at each operation means more than the average surgeon realizes. Self-reliance overlapped by self-conceit leads to daring and danger. This is minimized by team work, and in this rapid advancement of our science and art it is well to "box our compass" frequently and be sure of our bearings before forging ahead. "Let him that thinketh he standeth take heed lest he fall." "It is better to be careful than sorry," and "In allied counsel there is wisdom and safety." The psychological effect upon the patient of being seen by the first assistant before the operation, either with his chief, or representing him, can not be overestimated.

I recall one occasion after an operation upon a very nervous patient who had unnecessarily alarmed relatives who insisted that I be called in the middle of the night. The nurse in charge called my assistant, who was both wise and tactful. On entering the room the patient said: "I did not send for you, but for the man who operated upon me." He replied: "I know that, but I am the Doctor's assistant and have studied your case with him and assisted in the operation upon you; and it is my pleasure and duty to care for you between his visits should you need it. If there is anything unusual the matter with you, or any occasion for anxiety, I shall call him." The patient was satisfied and allowed him to examine her and prescribe for her. That kind of man, with diplomacy, training and efficiency, is an invaluable asset to any team.

In all our major and minor nose and accessory sinus operative work subsequent treatment, as well as operations in the pharynx and naso-pharynx, the mastoid and cranial cavity are expedited, made safer and more satisfactory by the aid of team work of trained assistants.

The general practitioners who bring or send patients to specialists needing surgical attention should allow the operator to select his assistants and not feel slighted if not asked to give the anesthetic or to assist in the operation. On two occasions in my experience I have seen alarming results from the inexperience of the anesthetist and assistant. Only the trained hand can successfully sponge or use the suction apparatus without producing unnecessary traumatism to the pharyngeal mucosa or keep the operative field clear in tonsillectomy and adenoidectomy, and only trained assistants can, with accuracy and thoroughness of technic and economy of time, assist in the mastoid operation, especially when the unexpected is encountered and the lateral sinus exposed or ruptured, a perisinus abscess is found, or a fistulus tract leading into the cranial cavity reveals an extra- or intra-dural abscess. Especially is team work valuable, and I may say necessary in the delicate and major operations upon the

eye, such as cataract and iridectomy operations.

Group study and team work will stimulate medical progress, add to the scientific progress of the medical man, increase his self-respect as well as independence of the people, and prevent paternalism in medicine. Not only as oculist and oto-laryngologist do we suffer when we fail to utilize the advantages to be gained by group study, but the internist and surgeon are equally culpable when they do not avail themselves more frequently of our services and investigations in our specialty.

When the practice of medicine constitutes an ideal added to our profession, and we combine clinical insight and scientific research, and see in medicine both a science and a philosophy, group study, group practice and team work will comprise the foundation upon which accurate diagnosis and successful treatment will be built.

AUTHORS' ABSTRACTS

Eye, Ear, Nose and Throat

Otolaryngology. T. J. Harris, New York, N. Y. Journal of American Medical Association, August 16, 1919.

The author, as a result of his experience as Director of the School of Oto-Laryngology at Camp Greenleaf, Georgia, urges the importance of a graded course of instruction in both theoretical and practical work. An alarming lack of qualification on the part of the average oto-laryngologist practicing in the cities and towns of this country was demonstrated by the results of the examinations conducted as a prerequisite to admission to the school. He strongly condemns the six weeks' course of instruction and urges the adoption of the recommendations of the committee on the teaching of oto-laryngology representing the several national societies, namely:

1. That there should be a standardized curriculum extending over a period of at least two years to be given at Class A universities or colleges.

2. That the student should pass a comprehensive examination upon the completion of the course; and

3. That a special degree should be conferred by the university or college. As a preliminary to the special instruction the student shall have engaged in general practice for at least four years or served as an interne in a general hospital for at least eighteen months.

Faulty Cranio-Spinal Form and Alignment, and the Eyes. Lloyd Mills, Los Angeles, Calif. American Journal of Ophthalmology, July, 1919, Vol. 2, No. 7, p. 493.

Faulty head postures have been considered, hitherto, as compensatory attempts to maintain correct visual balance. Many cases of defective posture, resulting from anatomical and pathological defects primary in the extremities and especially in the cervico-dorsal spine, show marked compensatory cranial tilting and rotations, in which the ocular positions and ocular muscle actions become altered to correspond to the new mechanical conditions.

Many defects of function spring from the constant cranial asymmetry associated with right- and left-handedness, the ocular positions, muscular distribution and actions becoming modified, and the left eye usually being higher, poorly convergent and cyclophoric. Early training in ambidexterity, corresponding to inborn equilaterality of the motor cortices, is urged for prevention.

The neck muscles aid the retina, extrinsic ocular muscles and otic labyrinth in spatial orientation, and postural defects affect this function.

Mills emphasizes the hitherto unrecognized accessory visual function of the cervico-dorsal muscles, whose rigidity in steadying the head is as essential to accurate vision as is the purely local action of the eye muscles. Steadying of the shoulder-girdle is equally essential in finely coordinated manual work. Strains of this stabilizing system, especially when combined with spinal defects, produce the distressing suboccipital, cervical and brachial symptoms incident to reading and many occupations.

Cranio-spinal postural defects are shown to be the usual fundamental faults in eye cases complaining of nuchal and occipital aching and are curable or capable of palliation by appropriate orthopedic and ophthalmic procedure.

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EDITORIAL DEPARTMENT

THE DENTISTS AND FOCAL INFECTIONS.

One of the most forceful addresses in the history of American medicine was entitled "The Furor Operativus." It was delivered before the American Medical Association in 1895, by Dr. Nicholos Senn, who called attention to the abuses in surgery, such as trephining in microcephalus, the removal of normal ovaries for obscure nervous diseases in women, and like surgical fads that have taught their lessons, but have passed away. The trenchant pen and the forceful oratory of a Senn are needed at this time to halt the "furor" of extracting teeth that is sweeping over the country that seems likely to discredit the profession of dentistry; and at the same time may more than counterbalance the good that has come from the recent knowledge regarding the relation of dental focal infections to many local and general diseases.

A few years ago it was difficult to persuade a patient with a mouth full of infection to go to a dentist. Now the pendulum has swung the other way to such an extent that the average man believes that in order to get well of any disease from the tip of his toes to the top of his head all that he has to do is to go to a dentist and have his teeth extracted. The doctor is being eliminated and some dentists are claiming to cure everything by pulling teeth.

Of course the rational use of the knowlelge gained from scientific investigations of focal infections is the rule with the best doctors and the best dentists; but those of both professions who are not well informed on the subject, are advising and are extracting many teeth that have been considered sound until the x-ray reveals a deadly and mysterious dark spot at the root. Never in history has there been a better example of the aphorism—"a little learning is a dangerous thing."

ABUSES OF THE X-RAY

The x-ray when rightly employed and intelligently interpreted is a great aid in the diagnosis of granulomata at the roots of teeth; but the tyro with an x-ray machine, whether he be a dentist or a physician can do a great deal of damage to the mouths of trusting patients. Before any man should advise the extraction of teeth from x-ray findings, he should have a thorough knowledge of the technic of radiography, and a clear understanding of the pathology underlying focal infections. It should be remembered that the x-ray is not infallible; and if a radiograph indicates an apical abscess, or other focus of infection in the jaw, another exposure should be made, and the x-ray diagnosis verified by testing the tooth for viability, because it is a serious thing for a person to lose even one tooth. It is also advisable to have more than one competent dentist, in addition to the physician, interpret the picture before teeth are sacrificed. It is not the use of the x-ray but its abuse, that is doing the damage in dentistry.

Undoubtedly many persons have been relieved of infections that were responsible for arthritis, endocarditis, gastric and duodenal ulcers and many other diseases, by

removal of the primary dental foci infections in the jaw; but there are many who have received no benefit from the removal of their teeth, and who will be handicapped in masticating their food for the rest of their lives. These unfortunates will carry with them to their graves the belief that they have been badly advised and ignorantly treated. This is particularly true of the so-called neurasthenics who are willing to try anything, once, with the hope of relief from their complaints.

Already many cases of gastritis, and functional disorders of the stoamch are being reported among persons, who have had their teeth removed on the promise of an unwise dentist or doctor that the extraction of the teeth would cure the trouble. It happens only too often that the unhappy patient secures no relief from his symptoms by this operation, and as a result he has added the discomforts of indigestion.

THE IMPORTANCE OF ROUTINE EXAMINATIONS OF THE TEETH

The dentists have been diligent in extracting teeth, but have not gotten all the infected ones, by a great deal; and no physician should fail to make a thorough examination of the mouth in every case in which there is any doubt of the etiology of a condition that could be caused by an infection. It is also important to have x-ray pictures made of suspicious teeth, particularly those with crowns, permanent bridges, and those in which the nerves have been destroyed; but the greatest caution should be used in advising the removal of teeth.

The time has arrived when every physician and every dentist should become thoroughly informed regarding focal infections. They should learn the value of, and the indications for, removing teeth that have granulomata at their roots; but they should realize, however, that because an x-ray film shows a shadow at the roots of teeth of a patient who has an infection, or who is chronically ill, it does not prove that the focal infection is the source of the trouble and that removal of the teeth will cure the trouble. Furthermore teeth suspected of harboring granulomata should first be tested for viability since no live tooth can have one. There is still much to learn about focal infections and both physicians and dentists should be sure of their ground before they condemn persons to become toothless for the rest of their lives. Removable bridges and plates are helpful in mastication, when fitted properly; but at best they are poor substitutes for natural teeth.

LITERATURE ON FOCAL INFECTIONS

Perhaps the most valuable contribution to the literature of dental infections as related to arthritis, the anemias, digestive and nervous diseases, and other local and general conditions, that only recently have been proved to be of infectious origin, is the report of the Symposium on Oral Sepsis at the Memphis meeting of the Southern Medical Association. The papers in the symposium were by some of the ablest men in American medicine, and by a dentist of unusual attainments; and the discussions are quite as valuable as the papers read. These papers and discussions were published in the SOUTHERN MEDICAL JOURNAL in July and September, 1918. The writer has just read them for the second time; and they contain much food for thought to physicians who desire to give their patients the best service. The JOURNAL commends these articles to those who do not know all about focal infections:

Barker, Lewellys F., Baltimore, Md.: "Oral Sepsis and the Digestive Apparatus."

Graves, M. L., Galveston, Texas: "Oral Sepsis and the Anemas."

Hinman, Thomas P., Atlanta, Georgia: "Diagnosis and Treatment of Oral Infections."

Gibbes, Heyward, Columbia, South Carolina: "Oral Sepsis and Arthritis."

Beck, Harvey G., Baltimore, Maryland: "The

Relation of Chronic Infection to Thyroid Deficiency."

Brown, Alexander, G., Richmond, Virginia: "Oral Sepsis and the Cardio-Vascular System."

Block, E. Bates, Atlanta, Georgia: "The Relation of Oral Sepsis to the Nervous System."

Discussion by Stewart R. Roberts, Atlanta, Ga.; J. E. Paullin, Atlanta, Ga.; Robert Wilson, Jr., Charleston, S. C.; J. B. McElroy, Memphis, Tenn.; Edward H. Richardson, Baltimore, Md.; E. C. Thrash, Atlanta, Ga.; Thomas P. Hinman, Atlanta, Ga.; M. L. Graves, Galveston, Tex.; Lewellys F. Barker, Baltimore, Md.; E. Bates Block, Atlanta, Ga.; and Harvey G. Beck, Baltimore, Md.

ROCKEFELLER'S MILLIONS FOR MEDICAL EDUCATION AND PUBLIC HEALTH

There was a time when one of the churches declined to accept a gift from John D. Rockefeller because its self-anointed saints said that the money was "tainted." This brings up the memory of the old darkey who said that "Rockefeller's money is twice tainted — 'taint for you and 'taint for me." This was in the days when there were but few multi-millionaires and before "John D." began to give his millions for many worthy causes. There are many now who see the hand of Providence in the beneficent use of money accumulated by such men as Rockefeller and Carnegie. It is certainly true that the world is being made a better place in which to live by the millions that Rockefeller has given to education, for medical research and for the prevention of disease.

Rockefeller's recent donations of $20,000,000 to medical education and $50,000,000 for medical research to prevent disease, bring the benevolent gifts of this one man nearly to half a billion dollars; and make him one of the greatest benefactors to mankind in the history of the world. The details of the expenditure of this vast sum of money have not been announced, but it will be handled by boards either existing or to be appointed by Mr. Rockefeller, who will see that it is expended in ways that will do the most good. Many people have opinions about parceling out money for benevolent purposes; and the JOURNAL could make some suggestions to the Rockefeller Foundation and the other organizations that will have charge of these funds.

HOOKWORM AND MALARIA

Mr. Rockefeller has been generous to the South. The money that he has given to various causes has been wisely expended, and in ways that have improved living conditions in many states. The $5,000,000 which he gave for the eradication of hookworm helped millions of worthy people and improved industrial conditions tremendously in certain districts of the South. No money was ever expended to better advantage than this; but there are still millions of people in the rural districts of the South who are ill, or who are handicapped in their earning capacity, because of the easily preventable disease, uncinariasis. The various local and state health authorities are keeping up the fight on hookworm and with a few million dollars help it is reasonable to hope that this disease, which came as one of the penalties of slavery, having been brought by negroes from Africa, may be entirely eradicated.

The Rockefeller Foundation has provided money for the intensive study and the practical prevention of malaria in certain localities in Mississippi and Arkansas. These investigations have proved that malaria can be eradicated from any community at a comparatively small cost. If a part of this recent gift could be spent in extending this anti-malaria work into every infected locality there would be hope of actually eradicating malaria from the United States, as has been done with yellow fever. The Rockefeller Foundation proposes to eradicate yellow fever from the world; and one of the great steps to-

ward freeing mankind from the ravages of hookworm and malaria would be to demonstrate that it can be done in the greatest country in the world.

Of course, there are many other great problems in medical research and in the prevention of disease that affect all the people of the United States which should receive consideration; but in no other way can the same amount of money be expended for more permanent good than its use in ridding the United States of tropical diseases.

MEDICAL EDUCATION AND RESEARCHES IN TROPICAL DISEASES

The South should receive a considerable share of the $20,000,000 for medical education for the reason that the educational institutions in the various Southern states have limited endowments when compared to those that are located in the North and East. This is due to the fact that the North and East happen to be the sections of the country in which the great money and industrial centers are located; and those who have accumulated great fortunes have endowed the institutions in which they or their sons were educated, or those near them because their needs were better known to them. Despite the limited resources, medical education in the South has made wonderful advances in the past decade until now there are very few medical schools in the Southern states that have not been placed in Class A. These schools need financial assistance relatively speaking more than those which already have large endowments.

It is understood that from these millions there will be large contributions to medical research in communicable diseases. It would surely seem that a goodly portion should be spent in studying malaria; hookworm; the entameba dysenteria; the trichomonas, and other intestinal parasites; and certain other tropical diseases that are endemic in at least half the United States.

The etiology of pellagra is still a question on which there is a divided opinion. Many believe it to be due to an infection of some kind, while others are convinced that Goldberger's theories account for the disease. Goldberger's experiments should be carried out in Maine or in other localities in which there is no pellagra; and the work begun by Lavinder, Francis, Siler and others, studying the disease from the infectious viewpoint, should be continued.

No better use of these funds could be made than by establishing research laboratories and endowing professorships in the medical colleges of the South that have proved worthy of assistance.

There is no doubt that those who are distributing these millions for benevolent purposes will be conscientious in their efforts to place the money where it will bring the greatest returns in good. It would seem, however, that since Mr. Rockefeller's great fortune has been made by business dealings with the citizens of all sections of the United States, an equitable method of helping those who have helped him would be to make contributions to each state in proportion to the business that it has had with the interests in which the Rockefeller fortune has been accumulated. Of course, the Rockefeller Institute in New York should be made the greatest research laboratory in the world; and other institutions which have been founded and assisted by the Rockefeller fortune should receive further contributions; but the JOURNAL respectfully suggests to the Rockefeller Foundation and to other organizations which have been given the privilege of disbursing millions for medical education, for medical research and for the prevention of disease, that in the sixteen Southern states, representing approximately one-third the population of the

United States, there is greater need and larger opportunity for financial assistance than in any other region of our country.

SENATOR MEYERS' ANTI-VIVISECTION BILL

The negroes are claiming the right to social equality, and a lot of other things that they ought not to have, and will not get, because they "won the war." Now, Senator Meyers, of Montana, has discovered that dogs are responsible for the Allies' victory. He, therefore, says that they "earned the protection of the Government," and has introduced a bill in the United States Senate to abolish "vivisection" of dogs as practiced by barbarous college professors and other research workers who use animals for experimental purposes. Senator Meyers does not as yet advocate pensions and Government-owned kennels for the families and relatives of dogs who fought in the war; but he damns, with his usual vociferous objections, the monsters among scientific men who are heartless enough to use innocent, harmless, unprotected (and sometimes orphan) canines for the advancement of medical science, which has for its object the prevention of disease and the saving of human life.

Senator Meyers limits his bill to preventing vivisection among dogs, thereby discriminating against cats, "cooties," horses, human beings and other animals that helped to win the war, and that have been used by these cruel scientists in carrying on various experiments—always with the idea of lessening disease and death among men, women and children. Senator Meyers is missing an opportunity for undying fame by not extending his philanthropic efforts to protect all the animals that are used for experimental purposes.

Cats are used more than dogs in experimental laboratories; and cats by the thousands "did their bit" in the war. One of the services rendered by cats during the war was in killing the rats that infested the trenches and dugouts of the British and French soldiers; and, horrible to relate, cats were used for experimental purposes to see if trenches and dugouts contained poisonous gases that were used by the Huns to kill and disable Allied troops. If the cat were killed, or if it whined, when it reached the bottom of a trench, soldiers kept out; and while some cats were sacrificed, many soldiers' lives were saved by the experiments. Senator Meyers is not fair to "Tom" and "Tabbie" when he excludes them from the beneficence of his anti-vivisection bill.

CRUEL EXPERIMENTS ON COOTIES AND MEN

One of the most cruel experiments that has been made on animals was by a woman biologist, an American, in Paris during the war. She was endeavoring to find some animal besides a soldier on which the "cootie" could live; and she was also trying to find out if a man could not take some drug which would not poison him, but would prove fatal to the pediculus when he sucked human blood from his victim. She, therefore, used both men and "cooties" for experiment.

One of her subjects was a French sailor, who always came in drunk, whereupon for two francs an afternoon he would allow the "cooties" to feed upon him. This heartless biologist, after her pets had feasted upon French blood, would place them under the microscope to observe their postprandial performances. She found that after they had fed upon the drunken sailor they fought ferociously, tearing off one another's claws and maiming and killing each other to such an extent that she nearly lost all her "cooties." After long searching she found a Frenchman who did not drink and who was willing to be experimented upon for a price. The "cooties" who fed upon this son of the white

ribbon were docile and altogether lovely to each other. These experiments are of everlasting value to prohibitionists, while at the same time they give comfort to the inebriates who want to do their part in killing off enemies of the race.

The part that the "cooties" played in winning the war should not be forgotten. The Germans had no soap and they are not a very cleanly people at best, so that thousands of their soldiers were disabled by trench fever and many died of typhus. Both these diseases are transmitted by "cooties." These despised parasites, therefore, helped to disable and kill off the Germans and Austrians; and in simple justice to friendless lice, Senator Meyers ought to include them in his bill for protecting worthy animals.

During the war and in all ages, men have been experimented upon to demonstrate facts that will benefit mankind. Several Americans died of yellow fever in proving that the dreaded disease was transmitted by a mosquito. In France, fifty or more American soldiers voluntarily allowed lice to bite them and give them trench fever, in order to find out the cause of this disease which was incapacitating thousands of soldiers when they were most needed at the front. These experiments were responsible for many men being able to fight who otherwise would have been ill of trench fever.

No doubt so tender-hearted a man as Senator Meyers feels that men ought not to be allowed voluntarily to suffer disease and death. To be consistent, the Senator from Montana should also include men among those whom he would protect from designing scientists.

INCONSISTENT ANTI-VIVISECTIONISTS

The statement of Senator Meyers and other antivivisectionists regarding the cruelties of vivisection are not founded upon fact, and they would be ludicrous were it not that the credulous believe them. A class of men trained to alleviate human suffering see to it that their work upon animals is rendered as free from pain as possible. In fact the large majority of physiological experiments are performed with the animals under a general anesthetic and every precaution possible is taken to prevent unnecessary pain or mutilation of animals used in experiments.

In a personal letter to the Editor, Dr. W. B. Cannon, Professor of Physiology, in Harvard University, goes to the heart of the so-called vivisection question, when he says:

> "The claim that the dog should be exempted from use in experiments was based upon the services which he performed during the war. Apparently the antivivisectionists are not aware that the medical profession is engaged in a warfare against disease and premature death which is an immensely greater affair than the four years of conflict which have just closed. In a few months last year more persons were killed in a single epidemic than were killed in the World War. The antivivisectionists do not hesitate to support the drafting of our best young men which sends them to mutilation and death on the battlefield, merely to protect them and others from foreign domination. On the other hand, they do all that they can to prevent us from drafting a relatively small number of the lower animals in the fight which we are waging. To anyone who is acquainted with what has already been accomplished in medical research by means of animal experimentation, the attitude taken by the antivivisectionists is in the highest degree opposed to the best interests of humanity, and should be regarded as reprehensible by every right-thinking human being."

It is surprising how much effort the antivivisectionists are making to have the Meyers' bill passed. They are spreading propaganda against the use of animals for experimental purposes that is having its effect on public sentiment. Even so ably edited a paper as the *Birmingham News* was duped by this propaganda; and no doubt others who have not gone into the merits of the question are taking up the cause of the antivivisectionists, who are appealing to the sympathies of dog fanciers to insert an entering wedge to stop all experiments upon animals.

In order to prevent the enactment of legislation that would seriously interfere with advancement in the prevention and cure of disease, physicians, who know the facts regarding animal experimentation, should take the trouble to write their senators, urging that they oppose the Meyers' Antivivisection Bill.

THE PASSING OF SIR WILLIAM OSLER

With the death of Sir William Osler there passes from life's stage a most remarkable character, one who played a major role among the great men in medical history. No other man ever received, or deserved, the plaudits of the multitudes more than Osler, who at the time of his death was regarded by the whole English-speaking world as the greatest man in scientific medicine. Osler's great achievements, his original ideas, his clearness of expression, and his penchant for doing the unexpected, made his lines, and his acting, in what Shakespeare called the world's stage, of surpassing interest; yet he never posed, or played the part in anything that he did or said. He simply lived a life of accomplishment that kept his name on the lips of men and women who are interested in the higher things of life; and his teachings, and his example, for nearly half a century have been constantly in the minds of those who seek the truth in scientific medicine.

One of the penalties of greatness, or of being in the public eye, is to be misunderstood and misquoted; and Osler suffered grievously from newspaper notoriety. In one of his addresses when he himself was 54 years of age he remarked that few men ever initiate anything worth while after 40, and facetiously added that it would be a good thing for the world if some of the men over 60, who are doing foolish things, were chloroformed. A newspaper reporter who had a keener sense for news than he had for truth, gave it to the press as a serious statement. Such an assertion, which was accepted as the opinion of a man who was regarded as the greatest physician of his time, set the reading public of the whole world to discussing the theory that when a man's usefulness ends he should be "Oslerized;" and newspaper and magazine writers for months afterward discussed the moot question as to whether or not a man ever accomplishes anything after 60.

Dr. Osler explained that he was misquoted and misunderstood; but that was not news, and the newspapers either did not publish his denial or gave it scant space so that it was seen by few. Time, however, has shown that the newspaper notoriety which Osler received did not lessen his fame or his standing as the great leader in scientific medicine; and between the ages of 60 and 70, in his own life, he proved that the seventh decade may be as productive as any other like period in the "three score years and ten" allotted to man, and which he lived in all their fulness.

OSLER AFTER SIXTY

It was during the last decade of his life that Sir William Osler led a campaign for the expansion of public health work in England; and he lived to see Great Britain lead the nations of the world in establishing a governmental Department of Health, with a physician as a Minister in the King's Cabinet. As Regius Professor of Medicine in Oxford University he was regarded as the Dean among the medical men of Great Britain, and as such he was the inspiration for much of the scientific research in medicine that has been accomplished in England in the last few years.

The writer had the privilege of visiting Sir William at his home in June, 1918, and a few hours with him in his study and in the medical library of Oxford University showed that even though bowed with grief

over the death of his only son, who fell in France, he was then earnestly seeking after scientific truth. His confreres marveled at his prodigious energy, and his capacity for work, at a period of life when most men have retired from active duty.

Last July, the occasion of Sir William's seventieth birthday, gave his friends and admirers, the world over, the opportunity to pay tribute to his useful career. Osler memorial volumes were published and a number of medical journals issued special Osler numbers. Two letters received from Sir William Osler by the Editor of the JOURNAL showed his appreciation of the efforts to gladden what proved to be the last days of his life. It must have satisfied the soul of even so great a man as Osler to read in various newspapers, magazines and medical journals laudatory editorials regarding his life of achievement; and he must have felt that he had not striven in vain for scientific medicine when he saw in Osler memorial volumes and in journals the contributions to medicine from his distinguished confreres and his former pupils, many of whom had achieved great success.

OSLER'S PLACE IN LITERATURE

Osler will live throughout the ages, not only in medical history, but in general and philosophic literature. Few writers have had finer powers of expression; and many of his addresses and essays are classical in their diction. He had a way of saying and writing odd and quaint things that made them become a part of the mind that heard or read them. As an example, he said of the disease that brought an end to his life: "Pneumonia is the captain of the men of death. It is the old man's friend. It enables him to escape the cold gradations of decay. It is a painless release from the troubles of life." Whether or not Sir William Osler thought that pneumonia was a "friend" to him is not known, but it surely came to him before "the decay of old age" was apparent. Eighteen months ago he did not look or act like an old man; but, on the contrary, as the head of a military hospital at Oxford, and in his extraordinary interest in medical and surgical researches during the war, he led a very active life both physically and mentally.

The curtain has been drawn over the scenes in which Osler was the chief actor, and his mortal form has been made into ashes by the rapid method of oxidation, cremation, which he preferred to the slower process of putrefaction and decay; but on the stage which he erected in the hearts and minds of men and women he will play a leading part until scientific medicine has ceased to exist and literature is a thing of the past.

The story of his life, of how he developed from a poor boy in a Canadian village, the son of a minister, into the greatest teacher and practitioner of medicine of the world, will be an inspiration to the youth of this and future generations. Though he reached the very pinnacle of success and moved among the titled and the great, he never forgot the friends of his earlier life, and he was always among the humblest of men. Kipling could easily have had Osler in mind when he wrote his great classic "If," because in life this great physician fulfilled all the qualifications of the poet's ideal man.

"If you can talk with crowds and keep your virtue,
Or walk with kings—nor lose the common touch,
If neither foes nor loving friends can hurt you,
If all men count with you, but none too much;
If you can fill the unforgiving minute
With sixty seconds' worth of distance run
Yours is the Earth and everything that's in it,
And—which is more—you'll be a Man, my son!"

HOW SOUTHERN MEDICAL ASSOCIATION MEMBERS MAY HELP THEIR ASSOCIATION AND JOURNAL

The very best way for members of the Southern Medical Association to help their

JOURNAL is for them to read it carefully, and after profiting thereby, tell other doctors just what they think about the JOURNAL and the Association that has been built up by progressive physicians in the sixteen Southern states. The Association now has 5,700 members, all of whom receive the JOURNAL regularly. But there are many more subscribers who are not eligible to Association membership. President Cary says that we should have 10,000 members before the end of the year. There are 40,000 doctors in the South who are eligible to membership. If each member will make the effort to induce one of his friends to join, we may hope for the 10,000 objective before the end of 1920. The larger the membership, the greater the sphere of influence and usefulness of the Association.

The Association's JOURNAL has weathered the storms of war; and despite the soaring prices of paper and everything else that goes into the productive cost of a magazine, it publishes 132 pages each month. Some time ago when the JOURNAL was running a deficit each year, it was urged that if less expensive paper were used, it would not lose so much money; but the Journal continued to use a quality of paper which is better than that of many of the other leading journals. We are still using the same high-grade paper, which before the war cost 4¾ cents per pound and which now costs 10½ cents. The salaries of the JOURNAL employees, the last to go up, have been advanced, though not so much as the other productive costs, nor so much as they deserve. But the Association dues (including subscription) and the subscription price to the JOURNAL remains at $3.00 per year.

JOURNAL'S ADVERTISERS

Were it not for the advertisers the JOURNAL long since would have had to suspend publication. Therefore, each reader is under obligation to the owners of private hospitals, book publishers, pharmaceutical houses, instrument dealers and others who patronize the SOUTHERN MEDICAL JOURNAL. He can help his JOURNAL by letting the people who advertise in it know that he is interested in maintaining a first-class publication by the Southern Medical Association. This can be done by glancing over the advertising pages of the JOURNAL each month and when ready to order a book or an instrument, for instance, write the dealer that his advertisement was seen in the SOUTHERN MEDICAL JOURNAL. There is no question that every advertiser gets more than 100 cents on the dollar for his space in the JOURNAL, but advertisers will not know it if our readers do not mention that the advertisement was seen in the SOUTHERN MEDICAL JOURNAL.

Recently an instrument dealer who was traveling in the South came to Birmingham and placed an advertisement in the JOURNAL because he said that one of his doctor friends in Norfolk, Virginia, told him that he should advertise his products in the Southern Medical Association JOURNAL. If other interested SOUTHERN MEDICAL ASSOCIATION members in their correspondence with firms that advertise or in conversation with their traveling representatives, inform them that the doctors of the South would appreciate their advertising in the SOUTHERN MEDICAL JOURNAL, they would soon place their advertisements where they would best reach the doctors of the sixteen Southern states.

The larger the number of members and subscribers and the greater the volume of advertising, the better and larger will be the JOURNAL that goes each month to the members of the Association. A little interest and a little effort on the part of members will in a few months make a vast difference in the success and usefulness of the organization and the JOURNAL in which all Southern physicians should feel a pride.

Southern Medical News

ALABAMA

At a recent meeting of the Mobile County Medical Society Dr. A. E. Maumenee was elected President; Dr. W. H. Oates, Vice-President; Dr. W. W. Scales, Secretary; Dr. E. W. Cawthon, Treasurer; Dr. H. T. Inge, Librarian.

At the annual meeting of the Madison County Medical Society, recently held in Huntsville, Dr. E. V. Caldwell was elected President; Dr. Edgar Rand, Vice-President; Dr. M. M. Duncan, Secretary and Treasurer.

At a meeting of the Jefferson County Medical Society, Birmingham, Dr. E. M. Mason was elected President; Dr. R. E. Cloud, Ensley, Vice-President; Dr. Gaston W. Rogers, Secretary and Treasurer; Dr. Cabot Lull, member Board of Censors; Dr. T. D. Parke, member Library Board.

At the regular meeting of the Morgan County Medical Society, held the latter part of December in Albany, the following officers were elected for 1920: Dr. Frank Emens, Trinity, President; Dr. J. V. Hamil, Vice-President; Dr. H. C. McRee, Hartsells, Censor.

At a recent meeting of the Montgomery County Medical Society, held at Montgomery, the following officers were elected for 1920: Dr. M. B. Kirkpatrick, President: Dr. Fred P. Boswell, Vice-President; Dr. A. S. Trumper, Secretary; Dr. F. C. Stevenson, Treasurer.

Deaths

Dr. Wm. R. Smith, Pinckard, aged 56, died in a hospital in Dothan, November 24, from dropsy.

Dr. W. C. Maples, Scottsboro, aged 61, died November 24.

Dr. A. R. Wilson, West Albany, died on January 7.

Dr. T. G. Howard, Selma, aged 71, died at his home November 23 after a few days' illness.

Dr. G. H. Stubbs, Birmingham, aged 50, died November 28.

ARKANSAS

Dr. J. L. Jones, Searcy, has been appointed Health Officer during the absence of Dr. J. M. Jelks, who has gone to San Antonio, Texas, to spend the winter.

The Franklin County Medical Society held its annual business meeting and election of officers in Ozark, December 9. Officers were elected as follows: Dr. W. J. King, Branch, President; Dr. J. T. Sadlin, Coal Hill, Vice-President; Dr. Thomas Douglass, Ozark, Secretary.

The David Hospital, at Pine Bluff, which has been closed for several months, is being repaired and will be reopened about February 15. The Hospital has been taken over by the Arkansas Baptist Convention.

The Miller County Medical Society recently met in Texarkana and elected officers as follows: President, Dr. L. H. Lanier; Vice-President, Dr. C. S. Laws; Secretary and Treasurer, Dr. W. M. Hibbitts.

A laboratory costing $5,000 will be installed at the Spark's Memorial Hospital, Fort Smith.

The Drew County Medical Society held its meeting early in December and elected the following officers for 1920: President, Dr. M. Y. Pope; Vice-President, Dr. E. R. Cotham; Secretary-Treasurer, Dr. A. S. J. Collins.

The First Councilor District Medical Society held its meeting in Jonesboro in December and elected officers as follows: Presdent, Dr. H. L. Throgmorton, Pocahontas; Vice-President, Dr. Chas. M. Lutterloh, Jonesboro; Secretary-Treasurer, Dr. Thad Cothern, Jonesboro.

The Jefferson County Medical Society held its annual meeting on December 2 and elected officers as follows: Dr. M. A. Shelton, Wabbaseka, President; Dr. James F. Crump, Pine Bluff, Vice-President, and Dr. Joseph F. Gill, Pine Bluff, Secretary-Treasurer.

Dr. J. T. Clegg, Siloam Springs, and Dr. S. A. Southall, Lonoke, have been reappointed members of the State Board of Health for four years.

A campaign is under way to raise $300,000 in the state to build a Children's Hospital.

Dr. Robert Ellis Weaver, Hope, married Miss Ruby Scott, of Hope, on November 26.

Dr. Andrew J. Clay, Hoxie, married Miss Enid Laveta, of Hugo, Okla., November 11.

Deaths

Dr. Chester Jennings, Little Rock, aged 62, died at his home December 11, from bronchial pneumonia.

Dr. James Pittman, Prairie Grove, died in December in the City Hospital at Fayetteville.

Dr. L. P. Gibson, Little Rock, aged 64, died December 29, at his home, from pneumonia and heart disease.

Dr. H. N. Dickson, Paragould, aged 52, died December 7.

DISTRICT OF COLUMBIA

The Surgeon General of the Army announces that there are approximately seven hundred and thirty vacancies in the Medical Corps and that examinations for applicants to fill these vacancies will be held throughout the United States on March 15, 1920.

Dr. Moses H. Darnall, after nineteen months' duty overseas, announces his discharge and the resumption of his practice at 1512 Ninth Street, Northwest, Washington.

Dr. William F. Patten announces his return from Army service and has resumed practice in the Parkwood, 1746 K Street, N. W., Washington.

Dr. John Francis Rooney, a public health service physician at Providence Hospital, was shot and probably fatally wounded on December 20 by a returned soldier who is in the hospital suffering from shell shock.

Deaths

Dr. Wm. P. McKee, Washington, aged 43, died November 30, from multiple sclerosis.

Dr. J. M. Flint, Washington, aged 81, died November 21.

Dr. A. J. Arbeely, Washington, aged 67, died October 30.

Dr. Charles H. Janney, Washington, aged 57, died December 4.

FLORIDA

A Floridian, who refuses to allow the use of his name has given to the State Health Officer, Dr. Ralph N. Green, his will, in which he gives $75,000 to carry on the fight on venereal diseases in the state.

Deaths

Dr. E. Van Hood, Ocala, aged 58, died December 5.

Dr. H. C. Hood, Palm Beach, died at the Emergency Hospital, West Palm Beach, November 18.

Dr. Washington Kilmer, Orlando, aged 81, died November 24.

Dr. G. W. Cocke, Bartow, aged 58, died in a hospital in Charlotte, N. C., November 12, after a surgical operation.

GEORGIA

The Bibb County Medical Society held its meeting on December 2, at Macon, and elected officers for 1920 as follows: Dr. R. H. Stovall, President; Dr. C. D. Cleghorn, Vice-President; Dr. J. P. McGhee, Secretary; Delegates to State Association, Dr. C. C. Harrold and Dr. J. C. Anderson.

Dr. Newdigate M. Owensby, formerly of Baltimore, Md., has recently returned from the Army and opened offices in the Peters Building, Atlanta. Practice limited to neurology.

Dr. Roy J. Holmes, Wadley, married Miss Esther Smith, Bartow, November 12.

Dr. J. D. Thomson married Miss Ruth Arnold, both of Atlanta, November 15.

Dr. J. L. King, Macon, married Miss Grace O. Ide, of Baltimore, November 26.

Deaths

Dr. F. R. Stone, Savannah, aged 83, died December 9.

Dr. Edwin H. Sims, Columbus, aged 57, died November 28, from heart disease.

Dr. William Greenlea, Atlanta, died January 2.

KENTUCKY

At the regular meeting of the Jefferson County Medical Society, on November 17, Dr. Geo. A. Hendon submitted a report of his committee appointed to extend an invitation to the Southern Medical Association, in session at Asheville, to hold its 1920 annual session in Louisville. Dr. Hendon's report of the success of his committee was enthusiastically received. The President of the Society, Dr. Claude G. Hoffman, named the following Committee of Arrangements: General Chairman, Dr. G. A. Hendon; Chairman Reception

Committee, Dr. J. G. Sherrill; Finance Committee, Dr. Sidney J. Meyers; Exhibit Committee, Dr. Chas. W. Hibbitt; Section Meeting Places, Dr. Henry Enos Tuley; Entertainment Committee, Dr. Louis Frank; Hotels Committee, Dr. Philip F. Barbour; Publicity Committee, Dr. C. W. Dowden. The committee will begin active work at once, thus assuring a successful meeting in 1920.

On December 24 the McCracken County Medical Society held its meeting at Paducah and elected the following officers for 1920: Dr. C. H. Johnson, President; Dr. W. J. Bass, Vice-President; Dr. J. N. Bailey, Secretary, and Dr. E. W. Jackson, Treasurer. Dr. C. E. Purcell was elected delegate to the State Medical Association. Dr. H. P. Sights was elected censor.

The Scott County Medical Society has elected officers for 1920 as follows: President, Dr. J. C. Thomason; Vice-President, Dr. L. E. Heath; Secretary and Treasurer, Dr. A. N. Crain; delegate to State Society, Dr. Wm. H. Coffman; alternate, Dr. Will Salin; Censor, Dr. John E. Pack; Referee, Dr. Coffman.

Dr. E. E. Archer has been appointed health officer for Johnson County.

The Harrison County Medical Society held its meeting at Cynthiana early in December. Officers elected for the ensuing year were: President, Dr. Marshall McDowell; Vice-President, Dr. L. N. Todd, of Berry; Secretary, Dr. W. B. Moore; Treasurer, Dr. B. B. Petty.

The Daviess County Medical Society held its regular meeting in Owensboro early in December and elected officers as follows: Dr. I. J. Hoover, Owensboro, President; Dr. C. M. Rice, Sutherland, Vice-President; Dr. J. J. Rodman, Owensboro, re-elected Secretary and Treasurer.

The Henderson County Medical Society has elected officers as follows: Dr. J. B. Lampton, President; Dr. W. W. Wilson, Vice-President; Dr. P. Ligon, Secretary and Treasurer; Dr. M. Y. Marshall, Censor.

Dr. Townes R. Leigh, head of the Chemistry Department in Georgetown College, has been elected as President of the Kentucky Section of the American Chemical Society.

Dr. P. W. Covington, of the International Health Board, offers aid from the Rockefeller Foundation, if county accepts, for the establishment of a health clinic for Daviess County, in Owensboro. The Rockefeller Foundation will give $5,000 for two years provided the county makes a like appropriation.

The Clark County Medical Society held its annual meeting at Winchester, December 31, and elected officers as follows: Dr. Howard Lyon, President; Dr. Edward P. Guerrant, Vice-President; Dr. Geo. F. Doyle, Secretary and Treasurer.

The Marion County Medical Society held its regular monthly meeting the early part of December and elected officers as follows for the ensuing year: Dr. O. M. Crenshaw, President; Dr. C. B. Kobert, Secretary and Treasurer; Dr. R. C. McChord, Dr. G. G. Thornton and Dr. E. Kelly, Censors. Dr. T. I. Campbell was appointed delegate to the next meeting of the State Society.

Deaths

Dr. O. N. Bergmeyer, Dayton, aged 31, died November 24 in Seton Hospital, Cincinnati, after an operation for appendicitis.

Dr. John D. Mutters, Ashland, aged 66, died the latter part of November.

Dr. V. B. Newman, Tilden, aged 80, died December 7, from senile debility.

Dr. Wm. E. Grant, Louisville, aged 74, died January 3 from heart disease while driving his automobile.

Dr. W. R. Frances, Bowling Green, aged 62, died at St. Joseph's Hospital on December 24, from pneumonia.

Dr. John Loomis, Jeffersonville, aged 99, died at his home December 22.

Dr. Thomas E. Russell, Paducah, died recently from paralysis of the throat.

Dr. E. J. Graham, Hodgenville, aged 80, died December 27.

Dr. John T. Strode, Maysville, aged 81, died at his home the latter part of December, after an illness of several months with paralysis.

LOUISIANA

The annual meeting of the Southern Surgical Association was held in New Orleans December 16-18. The following officers were elected: Dr. Willard Bartlett, St. Louis, President; Drs. C. Jeff Miller, New Orleans, and Edward G. Jones, Atlanta, Ga., Vice-Presidents; Dr. H. A. Royster, Raleigh, N. C., Secretary; Dr. Guy L. Hunner, Baltimore, Treasurer. Hot Springs, Va., was chosen as the place for the 1920 meeting.

Dr. William Kohlmann on December 11 married Miss Hedwige Ritter, both of New Orleans.

At a meeting of the Orleans Parish Society, held December 13, the following officers were elected: President, Dr. Hector E. Bernadas; Vice-Presidents, Drs. Hamilton P. Jones, J. E. Landry and J. M. Hountha; Secretary, Dr. Edward P. Ficklen; Treasurer, Dr. Foster M. Johns, all of New Orleans.

On December 23, under the direction of Dr. P. J. Carter and Miss Grete Judice, nurse of the Child Welfare Staff, a maternity clinic was opened at the Kingsley House in New Orleans.

Dr. W. R. Eidson, Baton Rouge, married Miss Wyonna Simmons, of Enterprise, Ala., November 4.

Physicians of New Orleans who were in the military service during the war have formed a post of the American Legion. Officers elected are as follows: Dr. John B. Elliott, Jr., Commander; Dr. Joseph A. Danna, Vice-Commander; Dr. John F. Dicks, Adjutant and Finance Officer.

Dr. L. F. Lorio, Lakeland, married Miss Marie L. Green, of Lottie, December 4.

Deaths

Dr. E. O. Powers, Baton Rouge, aged 54, died in the Baton Rouge Sanitarium, December 1, as the result of injuries received in an automobile accident the latter part of November.

Dr. L. F. Salomon, New Orleans, aged 80, died January 1.

Dr. A. B. Hays, Happy Jack, aged 72, died December 20.

MARYLAND

The Baltimore City Medical Society held its annual meeting in Baltimore on December 5 and elected officers as follows: Dr. Harvey B. Stone, President; Dr. E. A. Looper, Vice-President; Dr. Frank S. Lynn, Secretary; Dr. C. E. Brack, Treasurer; Dr. Guy L. Hunner, Censor.

Services in honor of the late Sir William Osler were held in Old St. Paul's Church, Baltimore, on January 1 by members of the medical profession and other friends. The trustees, faculty and student body of the Johns Hopkins University were represented, also nurses of the training school and officials of Johns Hopkins Hospital.

Plans are on foot to build a new hospital at Curtis Bay, so that those injured in the plants will not have to be sent to the hospitals in Baltimore, which are quite a distance from Curtis Bay.

Dr. R. Pearl has been appointed statistician to the Johns Hopkins Hospital.

McCoy Hall and other buildings of Johns Hopkins University were destroyed by fire November 27. On account of the destruction a resolution granting the Johns Hopkins University permission to erect a temporary frame building for the use of the School of Hygiene has been introduced into the Baltimore City Council. The building is to be 120 by 50 feet and two stories high.

Dr. John F. Hogan has been reappointed Assistant Commissioner of Health in charge of the Bureau of Communicable Diseases, and Dr. Marion B. Hopkins, Chief of the Bureau of Food and Dairy Inspection, Baltimore.

Deaths

Dr. T. B. Hayward, Baltimore, aged 83, died December 9.

Dr. E. G. Shower, Baltimore, aged 73, died suddenly December 10, from heart disease.

Dr. Wm. R. Eareckson, Elkridge, aged 52, died December 10, from cerebral hemorrhage.

Dr. R. L. Randolph, Baltimore, aged 59, died December 9.

Dr. D. M. Cheston, West River, aged 76, died December 22.

MISSOURI

The twenty-ninth annual meeting of the Western Surgical Association was held in Kansas City, December 5-6. This was the first meeting held since the members returned from Army service, and was one of the best attended and most enthusiastic that the Association has ever had. Officers elected were: Dr. Arthur T. Mann, Minneapolis, President; Dr. R. W. Corwin, Pueblo, First Vice-President; Dr. E. M. Sanders, Nashville, Tenn., Second Vice-President; Dr.

(Continued on page 34)

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(Continued from page 78)

Warren A. Dennis, St. Paul, Secretary and Treasurer. Next meeting will be held November, 1920, at Los Angeles, Cal.

A bill has been introduced in the House of Representatives authorizing the Secretary of the Treasury to sell the present marine hospital site and acquire a suitable site near St. Louis for the construction of a complete hospital plant for the treatment of beneficiaries of the War Risk Insurance and Public Health Service.

At the annual meeting of the Jackson County Medical Society, held in Kansas City December 2, the following officers were elected: Dr. John F. Binnie, President; Dr. G. E. Bellows, Vice-President; Dr. P. V. Woolley, Secretary; Dr. Wm. F. Kuhn, Treasurer.

Deaths

Dr. Wm. B. Ellis, Concord, aged 73, died December 20, from heart disease.

Dr. S. C. Adams, Mexico, aged 67, died November 23.

Dr. J. M. Tate, Fulton, aged 77, died December 2, from cerebral hemorrhage.

Dr. O. Leverett Peak, Springfield, aged 70, died at Topeka, Kan., recently, from apoplexy.

Dr. James W. Smith, Richmond, aged 71, died at his home October 21.

Dr. John Young Brown, St. Louis, aged 54, died at Phoenix, Ariz., October 30, from heart disease.

NORTH CAROLINA

The Tri-State Medical Society, composed of physicians of Virginia, North and South Carolina, will meet in Winston-Salem, February 18-19.

The Mecklenburg County Medical Society has reached a membership of 103, and is claimed to be the largest society in the state.

On December 1 the Union County Medical Society held its meeting in Monroe and elected the following officers for 1920: Dr. R. Armfield, President; Dr. H. D. Stewart, Vice-President, Dr. R. L. Payne, Secretary and Treasurer. Dr. S. A. Stevens was chosen to represent the local society at the state meeting.

(Continued on page 36)

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(Continued from page 34)

Union County is to have a whole-time health officer. The county is to pay $3,000, the state $1,500, and the Rockefeller Foundation $1,500, making a total of $6,000 a year for the work. Under the direction of a whole-time health officer will be a whole-time nurse.

At a meeting of the Henderson-Polk County Medical Society, held at Hendersonville, January 9, the following officers were elected for the year 1920: Prseident, Dr. Guy E. Dixon; Vice-President, Dr. L. B. Morse; Secretary and Treasurer, Dr. R. C. Sample, all of Hendersonville.

At a recent meeting of the Buncombe County Medical Society officers were elected for the ensuing year, as follows: Dr. C. W. D. Colby, President; Dr. J. M. Lynch, Vice-President; Dr. J. W. Huston, Secretary-Treasurer. Delegates to the State Society: Drs. E. B. Glenn and D. E. Sevier. Board of Censors: Drs. C. L. Minor, C. W. Reynolds and W. C. Brownson.

The Guilford County Medical Society met in Greensboro, December 4, and the following officers were elected: Dr. C. W. Banner, Greensboro, President; Dr. R. A. Schoonover, Greensboro, Vice-President; Dr. F. J. Pate, Greensboro, Secretary-Treasurer.

On December 1 the Iredell-Alexander County Medical Society held its meeting and elected the following officers: Dr. A. E. Bell, Mooresville, President; Dr. L. V. Cloninger, Statesville, Vice-President; Dr. J. E. McLaughlin, Statesville, Secretary-Treasurer.

Dr. Halliburton McCoy, Asheville, on October 25 married Miss Emma Louise Garnett, of Charlottesville.

Deaths

Dr. E. Reid Russell, Asheville, aged 49, died November 27, from septicemia following a scratch of the hand.

Dr. John Gray Blount, Washington, aged 49, died December 8, from cerebral hemorrhage.

OKLAHOMA

State Health Commissioner, Dr. A. R. Lewis, has appoined as County Health Officers the following: Dr.

(Continued on page 38)

Laboratories of Drs. Bunce and Landham

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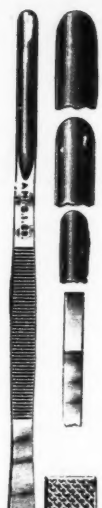

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(Continued from page 36)

J. P. Bartley, Stephens County, to succeed Dr. D. Long, resigned to become chief of the new state tuberculosis bureau, and Dr. F. E. Sadler, Coal County, to succeed Dr. R. M. T. Hill. Dr. P. M. Hargroves, of Texas County, has resigned but his successor has not yet been named.

Dr. George W. Goss, Pawhuski, has been appointed Superintendent of Health for Osage County.

At a recent meeting of the Muskogee County Medical Society, the following officers were elected: President, Dr. P. P. Nesbitt; Vice-President, Dr. Joseph H. Sanford; Secretary, Dr. Joseph G. Noble, all of Muskogee.

At the annual meeting of the Tulsa County Medical Society Dr. G. A. Wall was elected President; Dr. Fred S. Clinton, Vice-President; and Dr. A. W. Pigford, Secretary-Treasurer, all of Tulsa.

The Kay County Medical Society met in Blackwell the early part of December and elected the following officers: Dr. J. C. Hawkins, Blackwell, President; Dr. Ralph Mavity, Braman, Vice-President; and Dr. I. D. Walker, Secretary-Treasurer. Dr. A. P. Gerheart was chosen delegate to the State Medical Association.

The Woodward County Medical Society has elected officers as follows: President, Dr. Ralph A. Workman, Woodward; Vice-President, Dr. Paul G. Eilers, Quinlan; Secretary, Dr. C. W. Tedrowe, Woodward.

Dr. J. C. Stephenson, Norman, on December 27, married Miss Alice Marie Gerlach, of Woodward.

Dr. T. H. Flesher, Edmond, on October 18, married Miss Margaret Elizabeth Cherry, of Ardmore.

Dr. John C. Mahr, on December 11, married Mrs. Ollie Dunn, both of Oklahoma City.

Deaths

Dr. Andrew Lerskov, Claremont, aged 36, died in Kansas City, Missouri, in November.

Dr. S. H. Landrum, Altus, aged 52, during a blizzard on November 27, was killed by the overturning of his automobile.

Dr. Frank W. Wyman, Stroud, aged 71, died at the home of his daughter in Detroit, December 19.

Dr. D. D. Howell, Stillwater, aged 45, died December 6.

(Continued on page 40)

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Dr. George B. Adams, Director

(Continued from page 38)

SOUTH CAROLINA

The Hopewell Sanatorium, at Greenville, is planning to erect a separate ward for negro patients to cost $6,000. Greenville County has provided $2,500 of this amount.

Dr. J. R. Young, in November, married Miss Ethel Nelson, both of Anderson.

Dr. Arthur G. Kelley, Greenville, on November 18, married Miss Louise Dobbs, of Atlanta, Ga.

Deaths

Dr. John H. Pratt, St. Stephens, aged 44, was shot and killed in an affray near St. Stephens, December 14.

Dr. T. A. Crawford, Rock Hill, aged 66, died November 11.

TENNESSEE

Owing to an epidemic of diphtheria prevailing in the eastern part of Dyer County, the principal of the Churchton High School, Newbern, has closed the school.

At a meeting of the Memphis and Shelby County Medical Society held in Memphis, December 18, Dr. Lucius McGehee was elected President; Dr. J. B. Blue, Vice-President; Dr. J. J. Hobson, Secretary; Dr. Battle Malone, Censor.

The Putnam County Medical Society held its meeting December 4 at Cookeville, and elected the following officers: Dr. Z. L. Shipley, President; Dr. J. R. Story, First Vice-President; Dr. R. H. Millis, Second Vice-President; Dr. L. D. Ensor, Secretary-Treasurer.

The $53,000 mark has been reached in the anti-tuberculosis campaign in Chattanooga. This is over half the quota of $100,000 assigned to Chattanooga.

Dr. Helen Ellis has been selected to be one of the physicians on the staff of the Knoxville General Hospital. She will be assigned to Diseases of Women and Children.

Dr. W. A. Bryan, Dr. Lucius Burch and Dr. R. W. Grizzard have been elected to serve as the executive head of the medical staff of the Woman's Hospital, at Nashville.

Epidemics of diphtheria and scarlet fever are sweeping through every county of the state, according to a

(Continued on page 42)

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Sodium Cacodylate, Mercury Biniodide, Mercury Salicylate, Iron Citrate, Iron Citrate and Sodium Arsenate, Emetine Hydrochloride, Fisher's Solution (concentrated), Gray Oil, Novocain and 80 other formulae.

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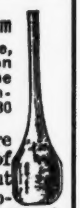

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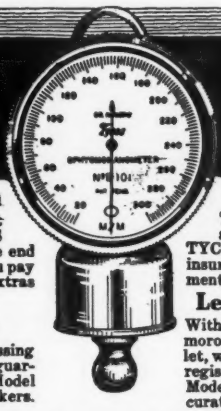

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(Continued from page 40)

statement by Dr. Olin West, Secretary of the State Board of Health.

The Madison County Medical Society held its regular meeting in Jackson December 18, and elected the following officers: Dr. W. G. Saunders, President; Dr. B. C. Arnold, Vice-President; Dr. James W. McClaran, Secretary and Treasurer.

The Weakley County Medical Society held its meeting in Martin early in December, and elected the following officers: Dr. W. E. Taylor, Latham, President; Dr. J. M. Stewart, Martin, Vice-President; Dr. A. P. Smythe, Martin, Secretary and Treasurer.

The Goetz Sanitarium, Knoxville, early in January was destroyed by fire, resulting in a loss of about $65,000 with $12,000 insurance. All patients escaped without injury.

The Shoffner Hospital, Nashville, closed on January first. It is understood that the hospital building will be remodeled and rented as an apartment house.

Dr. George C. Thomas has been appointed health officer for Greenville.

The New Baird-Dulaney Hospital at Dyersburg has been opened. This hospital is strictly modern in every respect. The staff consists of Dr. E. H. Baird, Dr. J. P. Baird, Dr. O. Dulaney, Dr. R. L. Motley, Dr. B. G. Marr, Dr. N. S. Walker, Dr. C. F. McCuskey and Dr. J. D. Brewer.

Deaths

Dr. Vaulx Gibbs, Chattanooga, aged 63, died November 30, after an extended illness.

Dr. Robert L. Knox, Memphis, aged 83, died October 7.

Dr. H. A. C. Bradfute, Loyston, aged 74, died November 15, from broncho-pneumonia.

Dr. Charlie Harrison, Petersburg, aged 41, died recently as the result of injuries sustained in an automobile accident received several months ago.

TEXAS

The McLennan County Medical Society recently held its regular meeting in Waco, and elected officers as

(Continued on page 44)

50% BETTER
Prevention Defense
Indemnity

1. All claims or suits for alleged civil malpractice, error or mistake, for which our contract holder,
2. Or his estate is sued, whether the act or omission was his own,
3. Or that of any other person (not necessarily an assistant or agent),
4. All such claims arising in suits involving the collection of professional fees,
5. All claims arising in autopsies, inquests and in the prescribing and handling of drugs and medicines.
6. Defense through the court of last resort and until all legal remedies are exhausted.
7. Without limit as to amount expended.
8. You have a voice in the selection of local counsel.
9. If we lose, we pay to amount specified in addition to the unlimited defense.
10. The only extract containing all the above features and which is protection per se.

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Professional Protection Exclusively

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is a magazine that is teaching thousands of people how to make a profit on listed stocks and bonds. Write for this week's issue, which contains up-to-date information about several established securities that can be bought now to yield a liberal return. INVESTMENT IS FREE. WRITE TODAY.

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$20

When you can have this complete **Pocket Mercurial Sphygmomanometer** (Dr. Beachler Type) at the price of $20.00.

Gives you guaranteed mercurial accuracy with pocket size convenience. Registers both systolic and diastolic pressures up to 300 millimeters. Neat case, 2¾ x 2¾ x 12½. Easily carried. Always ready for use. Send check for $20.00 and outfit will be delivered to your office prepaid.

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1195 E. 124th St. Cleveland, Ohio

MERCURIAL (Grey) OIL - - - - - - - - $1.50

One of the New and Nonofficial Remedies. A valuable adjunct in the treatment of syphilis. Put up in syringes, each syringe containing 10 doses. Credit of 50c upon return of syringe.

Pamphlet sent upon request.

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We do the classical test. Any of the various modifications will be made upon request, without additional charge.

Sterile containers, with needle, gratis upon request.

EXAMINATION OF PATHOLOGICAL TISSUE - - - $5.00

Accurate histological descriptions and diagnoses of tissues removed at operation should be part of the clinical record of all patients.

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Routine laboratory examinations made at reasonable prices. Send for fee list.

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Sherman's Bacterial Vaccines

when administered early, will reduce the average course of acute infections like

Pneumonia, Broncho-Pneumonia, Sepsis, Erysipelas, Mastoiditis, Rheumatic Fever, Cold, Bronchitis, etc.

to less than one-third their usual mortality and duration.

Sherman's Bacterial Vaccines are prepared in our specially constructed Laboratories, devoted exclusively to the manufacture of these preparations and are marketed in standardized suspensions.

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WASSERMANN TEST (With three antigens) $5.00
Autogenous Vaccines (Especially recommended in Furunculosis) 5.00
Widal for Typhoid and Para-typhoid 3.00
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Containers Free. Send for complete fee list.

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Jap. Luer Style Syringes, guaranteed to take Luer Needles and not to leak: 1½ cc, 55c; 2 cc, 65c; 5 cc, $1.00; 10 cc, $1.25; 20 cc, $1.75; 30 cc, $2.75; 50 cc, $3.50; 100 cc, $6.00.

Record Syringes—2 cc, $2.00; 5 cc, $2.50; 10 cc, $3.00. Discount on one dozen or more.

(Continued from page 42)

follows: President, Dr. H. F. Connally; Vice-President, Dr. E. L. Wedemeyer, Mart; Secretary-Treasurer, Dr. J. E. Lattimore.

At a meeting of the Orange County Medical Society early in December the following officers were elected: Dr. J. C. Seastrunk, President; Dr. R. S. Fleming, Vice-President; Dr. F. W. Lawson, Secretary-Treasurer; Dr. R. H. Jordan, Censor.

The Texas State Board of Health has bought a portable laboratory consisting of electric sterilizers and incubators and necessary physical and chemical apparatus for making bacteriological and chemical analyses of water and milk, and which will be of special value to the Department in typhoid epidemics.

Practically half of the $50,000 subscription to be raised to erect a hospital at or near Carlsbad for Texas discharged soldiers has been raised, according to reports from headquarters of the Texas Benevolent War Risk Society.

Dr. Warren G. Young has assumed the position as Chief Surgeon of the Reuss Memorial Hospital, at Cuero.

The Bowie County Medical Society held a meeting recently in Texarkana and elected the following officers: Dr. J. N. White, President; Dr. J. K. Smith, First Vice-President; Dr. K. M. Kelley, Second Vice-President; Dr. J. W. Beck, Secretary-Treasurer; Dr. S. A. Collom, Censor.

A movement has been started among Fort Worth oil men to erect an exclusive children's hospital to cost not less than $100,000.

New officers of the Harris County Medical Society for 1920, are as follows: Dr. Frank B. King, President; Dr. Martha A. Wood, Vice-President; Dr. Lyle J. Logue, Secretary.

Four deaths have been reported in Dallas from using faulty diphtheria vaccines.

Announcement has been made of a $50,000 Christmas gift for Wichita Falls, from J. A. Kemp, toward an endowment fund for a new Hospital.

A new City Hospital is being erected at Yoakum at a cost of $60,000.

(Continued on page 46)

Marshall Field Annex Building
25 E. Washington St.,
Chicago, Ill.

ESTABLISHED 1904

Our names and reputations stand back of our work.

Chicago Laboratory

RALPH W. WEBSTER, M.D., Ph.D., Chemical Dept.
THOMAS L. DAGG, M.D., Pathological Dept.
C. CHURCHILL CROY, M.D., Bacteriological Dept.

FOR the protection of your patient use a laboratory whose personnel and equipment are beyond question.

Containers for collecting all specimens will be sent gratis upon request.

Write for Fee Table if you have not received one.

Prevent Needless Fatigue

Walking with hard leather heels on still harder floors, stairways and sidewalks is bound sooner or later, to cause excessive nerve tire and fatigue.

O'Sullivan's HEELS

through their remarkable resiliency and shock-absorbing properties, substantially remove the harsh impact and jar from each of the 8,000 or more steps the average individual takes daily, and thus prevent much nerve tire and exhaustion.

Medical men have come to appreciate the great hygienic value of O'Sullivan's Heels, for personal experience has shown them conclusively how much these high grade rubber heels contribute to physical comfort, well-being and efficiency.

O'Sullivan's Heels assure maximum resiliency and durability, and are guaranteed to wear twice as long as ordinary rubber heels.

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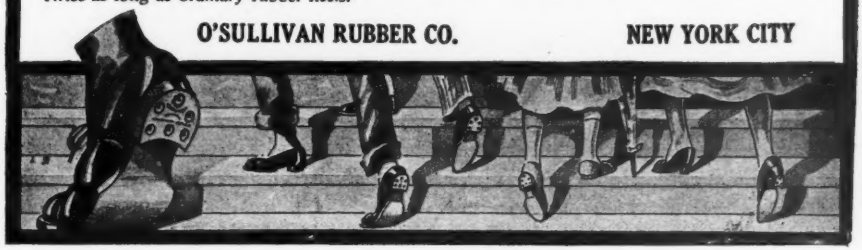

The Management of an Infant's Diet

Malnutrition, Marasmus or Atrophy

Mellin's Food
4 level tablespoonfuls
Skimmed Milk
8 fluidounces
Water
8 fluidounces

Analysis:

Fat	.49
Protein	2.28
Carbohydrates	6.59
Salts	.58
Water	90.06
	100.00

The principal carbohydrate in Mellin's Food is maltose, which seems to be particularly well adapted in the feeding of poorly nourished infants. Marked benefit may be expected by beginning with the above formula and gradually increasing the Mellin's Food until a gain in weight is observed. Relatively large amounts of Mellin's Food may be given, as maltose is immediately available nutrition. The limit of assimilation for maltose is much higher than other sugars, and the reason for increasing this energy-giving carbohydrate is the minimum amount of fat in the diet made necessary from the well-known inability of marasmic infants to digest enough fat to satisfy their nutritive needs.

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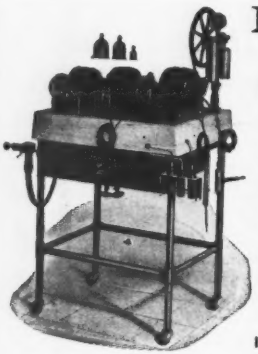

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Prompt and accurate service.

E. C. THRASH, M.D., Laboratory of Clinical Medicine

Candler Building Atlanta, Ga.

(Continued from page 44)

On December 9-10 the Tri-State Medical Society, composed of the medical profession of the States of Arkansas, Texas and Louisiana, met in Marshall, and elected the following officers: President, Dr. Chas. R. Hargrove, Marshall; Vice-Presidents, Drs. L. H. Lanier, Texarkana, Tex.; H. W. Jarrell, Mansfield, La.; Joe Becton, Greenville, Tex.; Secretary, Dr. F. H. Walke, Shreveport, La.

The Red Cross Convalescent Home, at Fort Bliss, in which returned soldiers were being cared for, was destroyed by fire December 6. All the patients were removed in safety.

Dr. Edgar L. Gilcreest, Dallas, on October 4, married Miss Dorothy Baldwin, of Garden City, L. I., N. Y.

Deaths

Dr. Wm. C. Rutledge, Denison, aged 58, died November 8, from tuberculosis.

Dr. T. T. Jackson, San Antonio, aged 51, died December 12, from heart disease.

Dr. W. E. Hodges, Bynum, aged 59, died December 10, while making a call.

Dr. H. L. Hutson, Garwood, aged 46, died at his office November 29, from heart disease.

Dr. W. G. Drummond, Bryan, aged 51, died November 24, from cerebral hemorrhage.

Dr. Charles S. Harle, Abilene, died suddenly at his home December 31, from heart disease.

Dr. T. A. Pope, Cameron, aged 72, died at his home October 5.

Dr. J. M. French, Silesbee, aged 45, was found dead at his home January 1st.

VIRGINIA

Dr. Walter C. Klotz, formerly of the Rockefeller Foundation, has been selected as Medical Superintendent of the Blue Ridge Mountain Sanatorium, near Charlottesville.

Dr. Calvin H. Childress, Richmond, on December 4, married Miss Eva Irnelda Ehrmantraut, Norfolk.

Dr. Joseph Bear, Richmond, on November 25, married Miss Kate Cohen, Norfolk.

Lynchburg physicians have increased their fees fifty per cent over former fees.

(Continued on page 48)

CLASSIFIED ADVERTISEMENTS

WANTED—Experienced traveling men to sell a well established line of pharmaceutical preparations to physicians in Kentucky, Tennessee, North Carolina, Georgia, Alabama and Mississippi. Those with an established business preferred. In making application please give references. Address H. J. Somerville, Sales Manager, 250 High St., Newark, N. J.

FOR SALE—Victor Portable X-Ray outfit, practically new. Cost $220.00, will sell for $150.00. Address Dr. W. C. Jones, South Highlands Infirmary, Birmingham, Ala.

WANTED—Partnership or Association. A trained and experienced abdominal and gynecological surgeon wants affiliation with busy general practitioner, or will assist surgeon; ethical, honorable, good personality. Unmarried. Small hospital in Southern city preferred. Let me do the work, you tend the finances. M. P. E., care JOURNAL.

Internes Wanted—St. Joseph's Hospital (a three-hundred bed general hospital) needs two more internes, and would be glad to consider applications. Recent graduates preferred, state school graduated from, and year of graduation. Compensation, board and lodging, and instruction. Term of service, one year. Apply to Dr. O. S. McCown, Bank of Commerce & Trust Building, Memphis, Tenn., President of Staff.

LOESER'S INTRAVENOUS SOLUTIONS

INTRAVENOUS MEDICATION

Is Destined to Revolutionize the Treatment of

MALARIA

The very evident increase in number and resistance of the red corpuscle, with subsidence of objective and subjective symptoms, makes the intravenous use of Iron and Arsenic the rational treatment of Malaria.

Recent observations indicate that the paroxysm is caused by hemolysis of the red corpuscle, rather than parental digestion of the plasmodium and marks the time when the resistance of the corpuscle is overcome by the attached plasmodium.

The red corpuscle is not only the site of the infection, but the most active agent in combatting the plasmodium.

Every study of Malaria indicates that the red cell destruction (anemia) and their recovery is a true index of the status of the infection.

The use of Iron and Arsenic is well justified by practice, but the intravenous method marks a new era in the treatment of Malaria.

Loeser's Intravenous Solution IRON and ARSENIC

Each ampoule, 5cc, contains 64 Mgs. (1) gr. of Iron Cacodylate. 6 ampoules.....per box $3.00

Loeser's Intravenous Solution QUININE DIHYDROCHLORIDE .5

Each ampoule, 5cc, contains .5 Gm. (7½ gr.) Quinine Dihydrochloride U.S.P. 6 ampoules in box $1.50

Complete list of Intravenous Solutions, reprints and clinical data furnished upon request.

NEW YORK INTRAVENOUS LABORATORY

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DOCTOR: Write or Wire
Ambulatory Pnuematic Splint Mfg. Co.
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RESULTS COUNT **FRACTURES**

Hip, Thigh or Leg Set. Splints Rented Ready to Apply. Your Treatment of Patients, In or Out of Bed, Secures Good Bone Union, Comfort, Strength and Health in the Least Time with the Ambulatory Pneumatic Splint.

Specify it and our "Ambumatic" Washable Abdominal Supporters.

Adjustable for uplift or Binder, to any part of abdomen. Once used always prescribed.

Send for Order Blanks, Sample Materials, Literature, Prices, etc.

(Continued from page 46)

The Lynchburg Academy of Medicine met recently and elected officers as follows: President, Dr. J. W. Carroll; Vice-President, Dr. Bernard H. Kyle; Secretary-Treasurer, Dr. E. F. Younger.

Dr. Emmett F. Reese, on November 5, married Miss Lynie Ridley, both of Courtland.

Dr. Frank L. Wysor, on October 25, married Miss Jennie Goodwin Snead, both of Clifton Forge.

Deaths

Dr. Charles F. Updike, Browntown, aged 55, died October 14, from diabetes.

WEST VIRGINIA

Dr. Hugh H. Carr, Fairmont, has been named chief of the surgical staff of the Cook Hospital, and Dr. Edward W. Howard, Fairmont, chief of the medical staff.

The Eastern Panhandle Medical Society met at Charleston, December 10, and elected officers as follows: Dr. H. G. Tomkin, President; Dr. B. B. Ransom, Harper's Ferry, Vice-President; Dr. J. M. Miller, Charles Town, Censor.

At the meeting of the Harrisburg County Medical Society held at Clarksburg, December 4, the following officers were elected: Dr. S. L. Cherry, Clarksburg, President; Dr. T. Post, Vice-President; Dr. Irving D. Cole, Secretary; Dr. J. F. Williams, Treasurer.

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Announcing

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Pneumo-Strep-Serum

(Antipneumococcic and Antistreptococcic Serum)

Reports from Army Camps indicate that the streptococcus hemolyticus and other streptococci are frequently associated with pneumococci as causative factors in pneumonia. When it is determined that the pneumonia is complicated by the streptococcus, the conjoint use of Antipneumococcic Serum Polyvalent and Antistreptococcic Serum Polyvalent is indicated.

Injecting Cultures into Serum-Producing Horse

The Difficulties and Inconvenience of separate injections of Antipneumococcic Serum and Antistreptococcic Serum may be avoided by using **Mulford Pneumo-Strep-Serum,** which is prepared by injecting horses simultaneously with the fixed types I, II and III of pneumococcus, also some strains from group IV pneumococcus, and 15 key strains of streptococcus.

Pneumo-Strep-Serum, therefore, possesses the combined advantages of antipneumococcic and antistreptococcic serums. It contains antibodies against all the various strains of pneumococcus and streptococcus employed, and, by standardization against type I pneumococcus, it is equally as potent against type I pneumonia as the type I and polyvalent antipneumococcic serums.

An injection of 100 mils Pneumo-Strep-Serum is equivalent to 100 mils Antipneumococcic Serum and 100 mils Antistreptococcic Serum.

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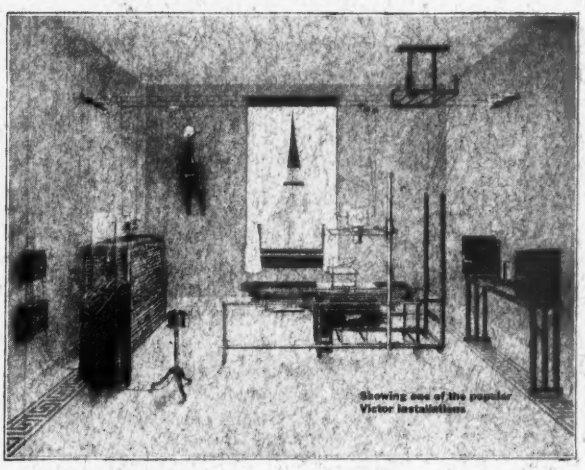

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Greater Volume of Returns means increased profits.
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Now Is The Opportune Time for You to increase the scope of your facilities—
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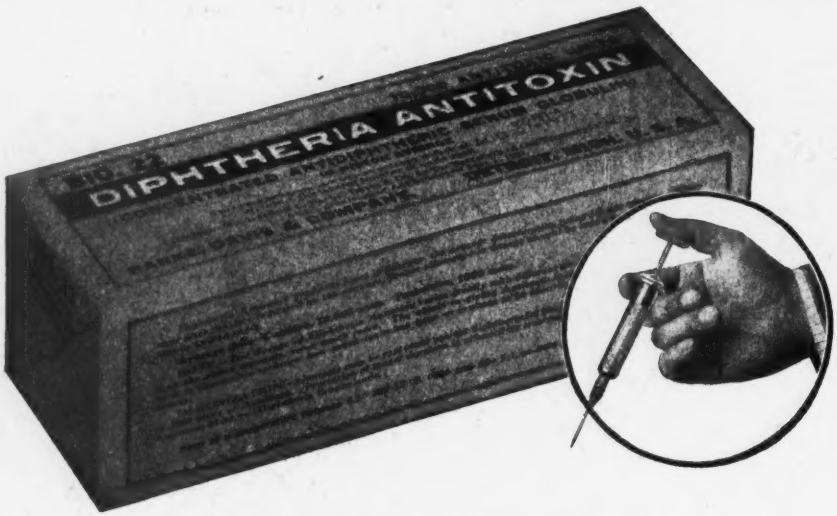
Sales Offices and Service Stations in all principal cities



The Importance of Larger Doses

ONE in every ten cases of diphtheria in the United States terminates in death, according to the New York City Board of Health. This high death-rate can be materially lowered by the early administration of large doses of diphtheria antitoxin. The average dose employed at the present time is 5000 units. Authorities assert that it should be 10,000 units.

Physicians who get the best results from diphtheria antitoxin give large doses early in the course of the disease. They administer initial injections of ten to twenty thousand units in all suspected cases. There is little danger from big doses. This fact is generally conceded. The real risk lies in reliance upon too small doses.

Higher unit dosage is now possible. Parke, Davis & Company are producing high-potency antitoxin that is from three to five times more concentrated than the serum supplied several years ago. What are the advantages of this concentrated and refined high-potency antitoxin? There is less liquid to inject, absorption is more prompt, results are quicker and better, lives are saved which would otherwise be lost.

Ask your druggist for P. D. & Co.'s Diphtheria Antitoxin.

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